行政院所屬各機關因公出國人員出國報告書

出國報告（出國類別：國際會議）

參加美國地球物理學會(AGU)秋季會議出國報告書

服務機關：行政院環境保護署

出國人　　姓名職稱：吳權芳薦任技正

出國地點：美國

出國期間：96 年 12 月 8 日至 12 月 16 日

報告日期：96 年 12 月 31 日

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出國計畫名稱：參加美國地球物理學會(AGU)秋季會議

出國人姓名/職稱/服務單位：吳權芳 薦任技正 行政院環保署監資處

出國日期：民國 96 年 12 月 8 日至 12 月 16 日

出國期間概況紀要：

活動日期	活動內容	活動地點
12/8-9	去程及參加開幕事宜	美國舊金山
12/10-14	美國地球物理學會(AGU)秋季會議	美國舊金山
12/15-16	回程	台北

行程成果評估及心得建議：

本次 2007 年美國地球物理學會秋季會議為連續第 40 年舉辦，計有超過 15000 人參加，各國學者報告內容包括大氣科學研究、全球氣候變遷研究、水文學研究、海洋科學研究等 25 個主題。本次會議主題眾多，主要針對與本署目前推動有關之空氣品質監測與預報、東亞沙塵、東南生質燃燒及工業污染等跨境長程傳輸、衛星對空氣污染監測應用等業務參與適當主題。

氣候變遷的監測研究持續在國際上熱烈推動，包括從單一測站監測結果及利用遙測資料進行區域性之解析，未來應持續整合本署大氣背景測站之監測資料，結合現有之光達、太陽輻射儀及衛星 MODIS 遙測資料，由空氣品質監測站為基礎，提昇為地球觀測系統之監測，有助我國環境品質監測作業躋身國際舞台。目前本署第一階段已於今(96)年 7 月 13 日與美國太空總署簽署合作協定，加入全球光達監測網及氣膠監測網，未來將持續推動相關國際環境監測合作事宜，以彰顯台灣在環保工作上的績效。

本署自 95 年 4 月啟用鹿林山國際背景測站，與美國環保署合作監測空氣中汞污染長程傳送情形，與美國海洋大氣總署合作分析大氣中微量污染物跨境傳輸，參與全球溫室氣體觀測計畫。未來應持續參與國際相關環境監測計畫，推動國際雙邊合作，強化監測技術與國際接軌。

目錄

參加美國地球物理學會(AGU)秋季會議出國報告

一、摘要

本次參加由美國地球物理學會辦理 2007 年秋季會議（如附件一及附件二），蒐集大氣二氧化碳污染物遙測技術、衛星對空氣污染監測應用、氣溶膠對氣候變遷影響之監測與模擬、大氣污染物之化學過程、都會區受氣溶膠及雲影響之輻射動力、區域污染物之傳輸及轉化等相關最新研究，以供本署二氧化碳通量、都會區空氣品質及東亞沙塵長程傳輸等相關業務推動參考。行程與內容摘要說明如下：

12 月 8 日　啟程：台北至美國舊金山

12 月 9 日　美國地球物理學會秋季會議報名及參加開幕典禮

12 月 10 日　參與各國學者報告區域尺度到全球尺度的空氣品質及氣候衝擊研究、大氣中二氧化碳遙測：資料反演、驗證及模擬研究、區域及全球尺度對流層氣體組成研究、區域及全球尺度對流層氣體組成研究相關議題共 16 篇論文。

12 月 11 日　參與各國學者報告大氣中日夜化學過程研究、雲對氣溶膠的影響研究相關議題共 8 篇論文。

12 月 12 日　參與各國學者報告大氣中日、夜化學過程研究、都會區輻射效應受雲及氣溶膠影響研究、衛星觀測對空氣品質應用研究、都會區輻射效應受雲及氣溶膠影響研究相關議題共 16 篇論文。

12 月 13 日　參與各國學者報告從區域到全球的空氣污染傳輸研究、都會區輻射效應受雲及氣溶膠影響研究相關議題共 12 篇論文。

12 月 14 日　參與各國學者報告大氣化學及氣候、衛星觀測對空氣品質應用研究、從區域到全球的空氣污染傳輸研究相關議題共 12 篇論文。

12 月 15-16 日返程：美國舊金山至台灣

二、會議背景說明

(一)主題

本次參加由美國地球物理學會辦理2007年秋季會議，其會議報告包括大氣科學研究(Atmospheric Sciences)、大氣及太空電離研究(Atmospheric and Space Electricity)、生物科學研究(Biogeosciences)、外層大氣學研究(Cryosphere)、地球及太空科學研究(Earth and Space Science Informatics)、教育及人類資源研究(Education and Human Resources)、測地學研究(Geodesy)、地磁學及古地磁學研究(Geomagnetism and Paleomagnetism)、全球氣候變遷研究(Global Environmental Change)、水文學研究(Hydrology)、礦物及岩石物理學研究(Mineral and Rock Physics)、近地面地球物理學研究(Near-Surface Geophysics)、非線性地球物理學研究(Nonlinear Geophysics)、海洋科學研究(Ocean Sciences)、古新世新學及史前氣候學研究(Paleoceanography and Paleoclimatology)、行星學研究(Planetary Sciences)、公共事務學研究(Public Affairs)、地震學研究(Seismology)、高層大氣物理學研究(SPA-Aeronomy)、太陽物理學研究(SPA-Solar and Heliospheric Physics)、磁氣圈物理學研究(SPA-Magnetospheric Physics)、地球深層學研究(Study of the Earth's Deep Interior)、地殼物理學研究(Tectonophysics)、火山學研究(Volcanology)、地球化學研究(Geochemistry)及岩石學研究(Petrology)等 25 個主題，計有 13640 篇文章及海報發表，為全球最大地球科學研討會之一。

本次 2007 年美國地球物理學會秋季會議為連續第 40 年舉辦，計有超過 15000 人參加，各國學者報告內容包括大氣科學研究、全球氣候變遷研究、水文學研究、海洋科學研究等 25 個主題。本次會議主題眾多，主要針對與本署目前推動有關之空氣品質監測與預報、東亞沙塵、東南生質燃燒及工業污染等跨境長程傳輸、衛星對空氣污染監測應用等業務參與適當主題。

(二)緣起

本署自民國69年前衛生署環保局時代開始建置我國空氣品質監測站網，至82年9月於全國共設置66個空氣品質監測站、3輛監測車、1個品質保證實驗室及監測中心等，經陸續進行站網檢討，至

94 年全國空氣品質監測站網已增設至 76 站。

監測地點由台灣本島擴充至馬祖、金門及澎湖 3 個外島，提供民眾更完整空氣品質監測資訊；移動式監測站增加為 4 個，以應臨時性空氣品質機動調查之需。因應國際監測趨勢，94 年 8 月開始提供全國各地 PM2.5 空氣品質監測資訊。

隨著環境遙測技術進步，各先進國家開始研究環境遙測儀器，為利提升本署監測技術及擴增環境監測，91 年設置 3 台逆溫儀，94 設置 1 部剖風儀，以輔助空氣污染物個案解析及空氣品質預報等。

95 年於中部鹿林山設置一個國際級大氣背景測站，用以監測空氣污染物跨國傳輸，如大氣汞、CFCs 微量氣體等，參與國際監測合作。於中壢設置微脈衝雷射雷達(光達)及太陽輻射儀，與美國太空總署合作觀測垂直剖面氣膠分布特性。接收地球觀測衛星之中解析度成像分光輻射度計衛星影像(MODIS)，以強化東亞沙塵暴監測。因應全球氣候變遷，94 年於宜蘭棲蘭山設置二氧化碳通量測站，進行森林生態活動碳吸存估算。

為持續提升本署環境監測技術與能力，並與國際接軌，透過參加本次 2007 年美國地球物理學會秋季會議，參與大氣科學、全球氣候變遷、水文學、海洋科學等相關主題研究，掌握國際發展趨勢，以利推動與本署有關之空氣品質監測與預報、東亞沙塵、東南生質燃燒及工業污染等跨境長程傳輸、衛星對空氣污染監測應用等業務，有助未來本署參與國際合作，躋身國際監測舞台。

三、會議內容重點整理

本次就2007年美國地球物理學會秋季會議參與之大氣科學、全球氣候變遷、水文學、海洋科學等相關主題研究，整理分述之：

(一)南美洲MODIS氣溶膠光學厚度反演研究：模擬敏感度測試

大氣中的氣溶膠(Aerosol)直接透過對太陽輻射的吸收及散射來改變氣候，同時也影響雲的形成機制及特性，由於輻射是對氣候產生影響的最重要因子，因此氣溶膠濃度影響輻射的收支平衡，也間接造成對氣候之影響，目前我們可以透過衛星及地面遙測資料來掌握氣溶膠的光學厚度。

本研究利用南美洲 MODIS 氣溶膠光學厚度反演與地面觀測資料進行比對，並發展一組區域性氣溶膠模式，研究中發現在模式中氣溶膠的微物理及光學特性較 MODIS 氣溶膠光學厚度反演結果顯著，因此有必要改進後者的反演理論程式，以利評估氣溶膠對輻射動力之影響，而氣溶膠監測網(AERONET)分析資料將有助解決MODIS氣溶膠光學厚度反演理論程式。

(二)氣溶膠中的碳及硫酸鹽對氣候變遷之影響探討

利用整合於NCAR CAM3.0的氣溶膠模式探討人為污染對氣候變遷之影響探討，共分成7組氣溶膠組成，包括3種硫酸鹽、1種黑碳、1種有機碳、1種硫酸鹽與黑碳混合及1種硫酸鹽與有機碳混合組成，每種組成均具有不同的光學及化學特性。

本篇研究模擬時間長達60年，其結果顯示大氣中的氣溶膠會影響大氣熱力結構及改變輻射之傳遞效應，包括雲遮蔽量、邊界層高度、地面地通量及降水等。

(三)大都會城市空氣污染區域效應

近年來各大都會區的空氣污染均明顯上升，所造成的社經及健康影響也受到討論及重視，尤其在開發中國家。例如在拉丁美洲國家城市中，如巴西聖保羅、墨西哥城等，空氣污染對健康的影響改開始顯現，尤其是氣溶膠中的有機碳，因此政府部門均致於減少空氣污染、二氧化碳的排放，相關的研究亦開始推動。

(四)墨西哥城空氣品質改善策略

臭氧及懸浮微粒(PM10)為墨西哥城都會區的主要指標污染物，經常超出健康標準，其它污染物則較少出現。在 2006 年，最大小時臭氧濃度超出標準(110ppb)達 59%，在 1991 年更高達 98%；在懸浮微粒方面，1996 年 20%天數超出日平均標準(120μg/m3)，且超出年平均標準(50μg/m3)。

造成污染的主要原因包括人口的成長，從 1992 年的 1 千 500 萬人增加至現在的 1 千 800 萬人；汽機車的增加，約 400 萬輛及 50000 家的工廠等因素，大量使用石化燃料，每天的能源使用量，相當於 4 千 4 百萬公升的汽油。

近幾年在空氣品質管理局的努力下，空氣品質逐漸改善，採取行動策略包括汽機車檢測、觸媒轉化器的更換、柴油含硫量降低、替代燃料使用、無車日活動推行、汽機車的排放標準加嚴、鼓勵車輛使用更乾淨及更有使用效率的能源、汰換 3000 輛小型巴士；40000 輛計程車；1200 輛的巴士；推動第一條巴士快速轉乘系統、300 家工廠污染減量及建置連續空氣品質監測系統等。

該局並持續執行 2002 年至 2010 年的空氣品質改善計畫，其中 2007 年啟動綠色行動計畫，重要行動方案中如：汰換 9500 量的小型巴士、計程車的全面更新、規劃 10 條巴士快速轉乘系統、規劃 12 條地下捷運系統、限制貨車的使用路線及時間、增加 5%的人行道及自行車道、採用智慧型交通號誌系統及引進低含硫量之柴油等。

(五)空氣污染、溫室氣體及氣候變遷

目前地球面臨的最重環境議題之一為溫室氣體，造成地球暖化、降雨增加、冰原的溶化及海平面上升等問題，同時也造成空氣污染及氣候變遷。10 年前大家仍普遍認為空氣污染只是局部區域的問題，但最新資料顯示：空氣中污染物的傳送可以跨陸地，甚至跨海洋傳送至其它國家，亞洲褐雲計畫(ABCs)的研究顯示出褐雲中含有次微米的氣溶膠，它會吸收陽光的輻射及造成反射，大量減少到達地面的輻射量，媒灰對太陽輻射的吸收會造成大氣增溫，兩種不同的淨效應，造成全球冷卻效應，但卻只有溫室氣體造成暖化的一半，這樣的結果造成南北

溫度梯度的減少，區域特性改善，也減少了陸地上的降水。由於亞洲褐雲對大氣環境的影響仍有其不確定性，因此將持續透過相關研究瞭解人為活動對氣候及環境變遷之衝擊。

(六)利用衛星氣溶膠產品比對研究

由於大氣中氣溶膠特性分析，可以發現其對氣候影響之複雜特性，不過目前已經可以利用密集地面觀測站與衛星遙測結果進行長時間比對，本研究發展出 1 度 X1 度第三階的氣溶膠產品，計算月平均氣候值，包括光學厚度 Angstrom 係數及細微粒百分比等。

(七)利用雷射探空監測大氣中二氧化碳濃度研究

量測對流層中二氧化碳之全球分布及月平均濃度變化，可以瞭解海陸二氧化碳通量交換情形，美國太空總署(NASA)的衛星二氧化碳感測器，可以利用反射太陽光的吸收光譜量測空氣柱中的二氧化碳及氧氣的分布，未來目標將持續發展光達監測技術，並安裝於飛機，進行二氧化碳氣柱的觀測，並與衛星遙測進行比對驗證，改進反演理論方程式。

(八)空氣品質監測與衛星遙測反演氣溶膠光學厚度相關性探討

在加州的聖約克山谷(San Joaquin Valley)一直以來懸浮微粒均無法符合州及聯邦政府的空氣品質標準，當地環保局利用儀器進行地面空氣品質監測，可以提供幾個監測地區精確的數值，但無法提供大區域完整的空氣品質狀況，因此規劃利用衛星可以進行大區域遙測的潛力來進行量測。過去在美國東岸的研究指出，衛星遙測反演氣溶膠光學厚度與懸浮微粒的地面觀測可以得到很好的相關性，本研究卻在聖約克山谷的比對，卻無法得到很好的結果。

在加州空氣品質管理局，利用整合式超級測站與衛星遙測結果進行探討發現，利用衛星遙測反演氣溶膠光學厚度與地面的氣膠觀測網(AERONET)的結果相關性非常好，但本研究即使利用細懸浮微粒($PM_{2.5}$)與衛星遙測反演氣溶膠光學厚度比對，其相關性亦不佳，因此未來有需要進一步利用光達探討氣象條件及大氣的垂直剖面狀況來改善兩者的相關性。

(九)大尺度動力過程對空氣柱中二氧化碳的影響

2004 年在威斯康新的秋季公園已建置空氣柱中二氧化碳的地面觀測系統,利用高解析度傅立葉波譜儀在進行晴空時的太陽光譜,這些光譜資料可以反演出高精確度的二氧化碳及其它溫室氣體的濃度。

由夏季的觀測結果,可以發現到空氣中柱的總二氧化碳量有很大的變異性,由單一站的觀測結果,可以推估大尺度的大氣與地球生物圈二氧化碳交換情形,並利用 GFDL AM2 模式來探討不同大氣對流參數化因子對二氧化碳模擬的敏感度測試研究。

(十)利用衛星對二氧化碳遙測結果反演近地面二氧化碳通量

現在二氧化碳地面觀測站無法有效涵蓋區域尺度到全球尺度的二氧化碳源滙的估計。美國太空總署發現的衛星上裝載二氧化碳遙感器,可以進行區域性近地面二氧化碳的濃度量測。本研究即探討其量測結果在不同氣溶膠厚度及太陽天頂角時的不確定性,並利用 MODIS 反演出來的氣溶膠厚度來探討二氧化碳量測誤差的相關性,並進而修正二氧化碳通量推估的結果。

四、心得與建議

(一)本次 2007 年美國地球物理學會秋季會議為連續第 40 年舉辦，計有超過 15000 人參加，各國學者報告內容包括大氣科學研究、全球氣候變遷研究、水文學研究、海洋科學研究等 25 個主題。本次會議主題眾多，主要針對與本署目前推動有關之空氣品質監測與預報、東亞沙塵、東南生質燃燒及工業污染等跨境長程傳輸、衛星對空氣污染監測應用等業務參與適當主題。

(二)利用全球氣溫、海平面高度及雪區的覆蓋量等監測數據，都可以證明全球氣候變遷的現象，並利用模式推估不同情境之大氣中二氧化碳濃度，如以目前二氧化碳大氣背景濃度約為 385ppm，若達 450ppm，全球平均溫度將上升 2℃；若達 550ppm，全球平均溫度將上升 3℃；若達 650ppm，全球平均溫度將上升 3.5℃。本署目前於鹿林山背景測站進行二氧化碳濃度及溫度監測，可以作為後續模式推估的驗證。

(三)利用沙塵地表參數化空間解析度的提昇，可以改善東亞沙塵暴的預報準確度，並利用衛星遙測資料，進行模式的改善驗證。目前本署東亞沙塵預報模式，即利用地面觀測資料及 Aqua、Terra 衛星之 MODIS 反演氣溶膠光學厚度(AOD)資料進行驗證，並持續改善地表參數化之空間解析度，以提升東亞沙塵模式之預報準確度。

(四)利用衛星氣溶膠遙測結果，與地面測站之細懸浮微粒(PM2.5)濃度進行比對，以作為未來利用衛星連續高解析度之區域性資料，掌握空氣污染分布情形。目前本署即嘗試利用接收之衛星 MODIS 反演之氣溶膠資料，進行各空品區 PM2.5 迴歸分析，以提供本署未來對 PM2.5 區域特性分布之掌握。

(五)氣候變遷的監測研究持續在國際上熱烈推動，包括從單一測站監測結果及利用遙測資料進行區域性之解析，未來應持續整合本署大氣背景測站之監測資料，結合現有之光達、太陽輻射儀及衛星 MODIS 遙測資料，由空氣品質監測站為基礎，提昇為地球觀測系統之監測，有助我國環境品質監測作業躋身國際舞台。目前本署第一階段已於今(96)年 7 月 13 日與美國太空總署簽署合作協定，加入全球光達監測網及氣膠監測網，未來將持續推動相關國際環境監測合作事宜，以彰顯台灣在環保工作上的績效。

(六)本署自 95 年 4 月啟用鹿林山國際背景測站,與美國環保署合作監測空氣中汞污染長程傳送情形,與美國海洋大氣總署合作分析大氣中微量污染物跨境傳輸,參與全球溫室氣體觀測計畫。未來應持續參與國際相關環境監測計畫,推動國際雙邊合作,強化監測技術與國際接軌。

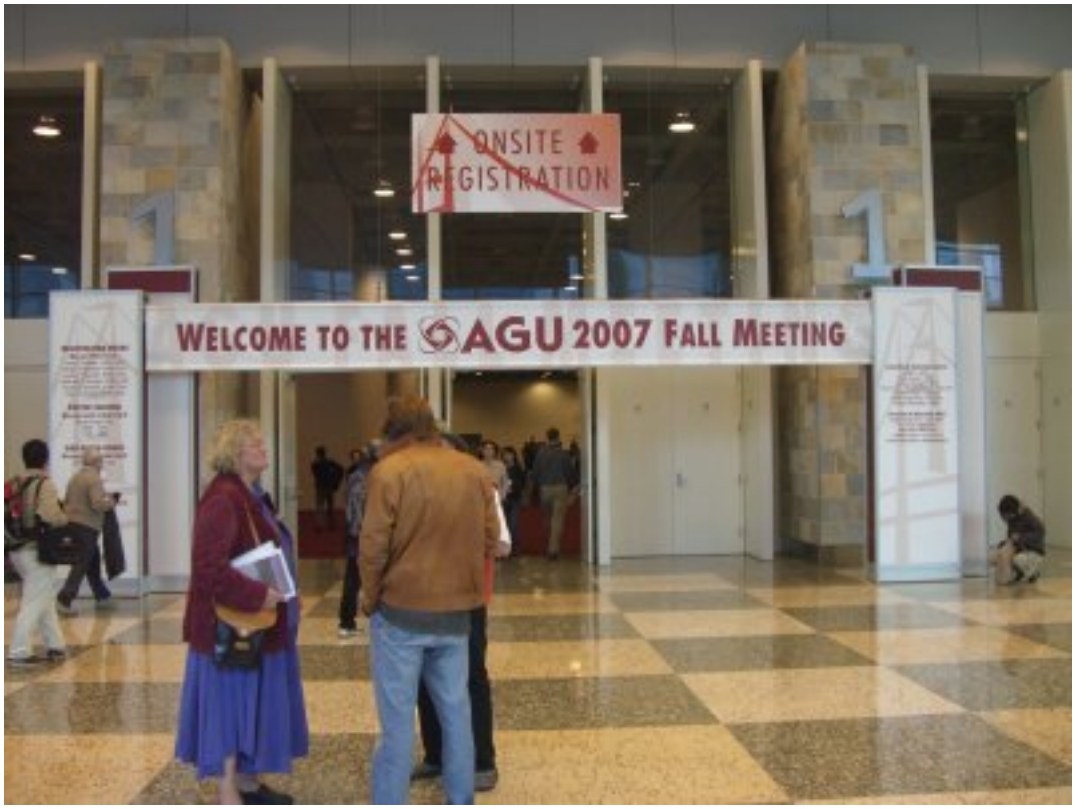
(七)國際交流均以英文為主,我國許多的網頁資訊要提供英文的版本,才能有交流的實質效果。目前本署已建置空氣品質及紫外線之測報英文網頁,並逐時更新最新監測資料,未來將持續充實環境遙測相關資訊,提升我國環保監測資訊分享的能力。

附件一

MOSCONE 會議中心

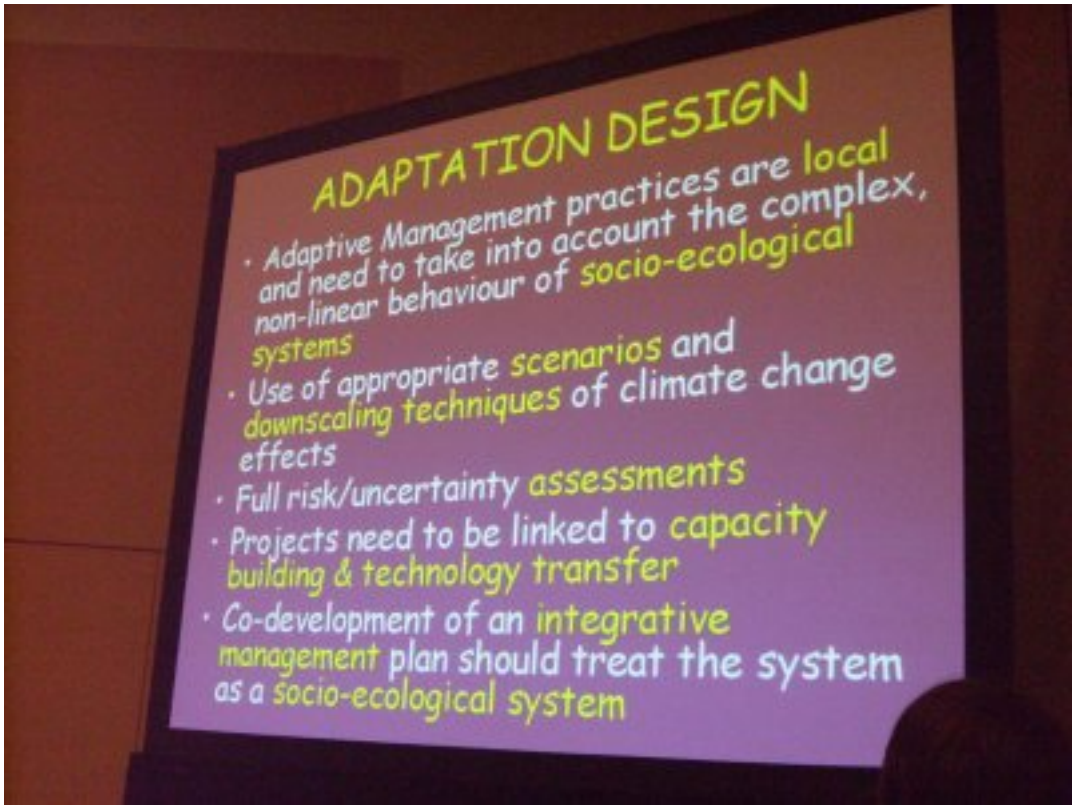
AGU 會議與會專家學者

AGU 會議與會專家 Mr.

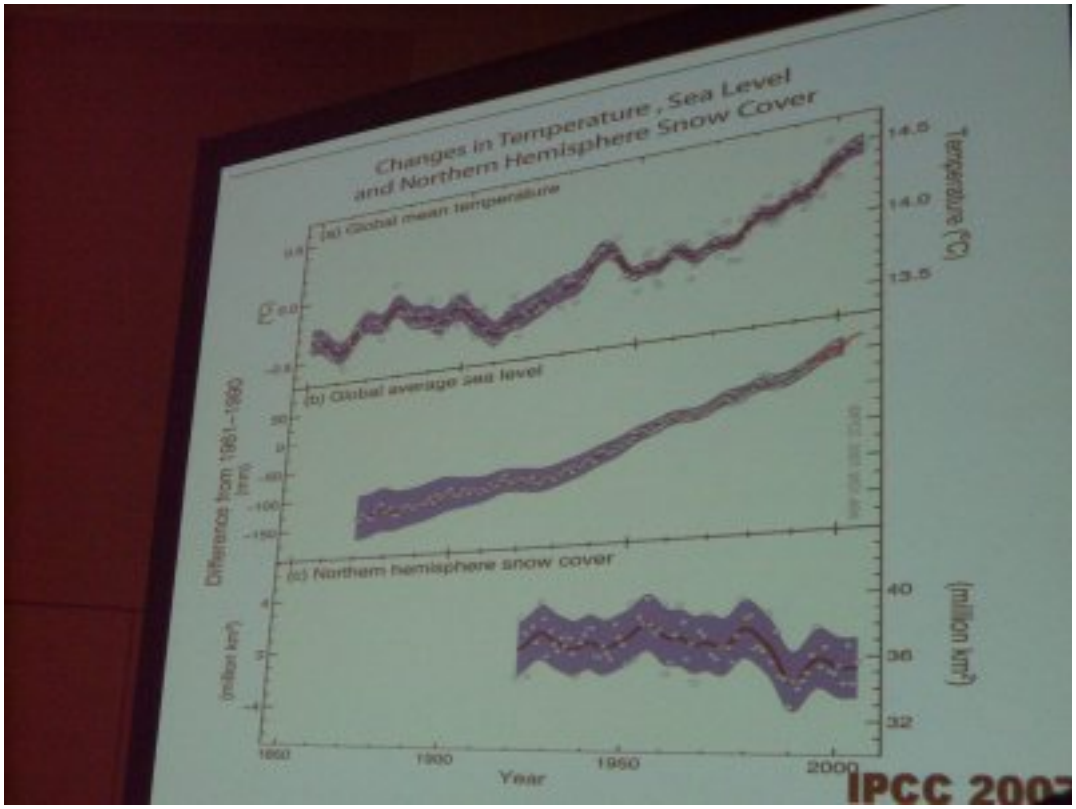


MOSCONE 會議中心註冊處

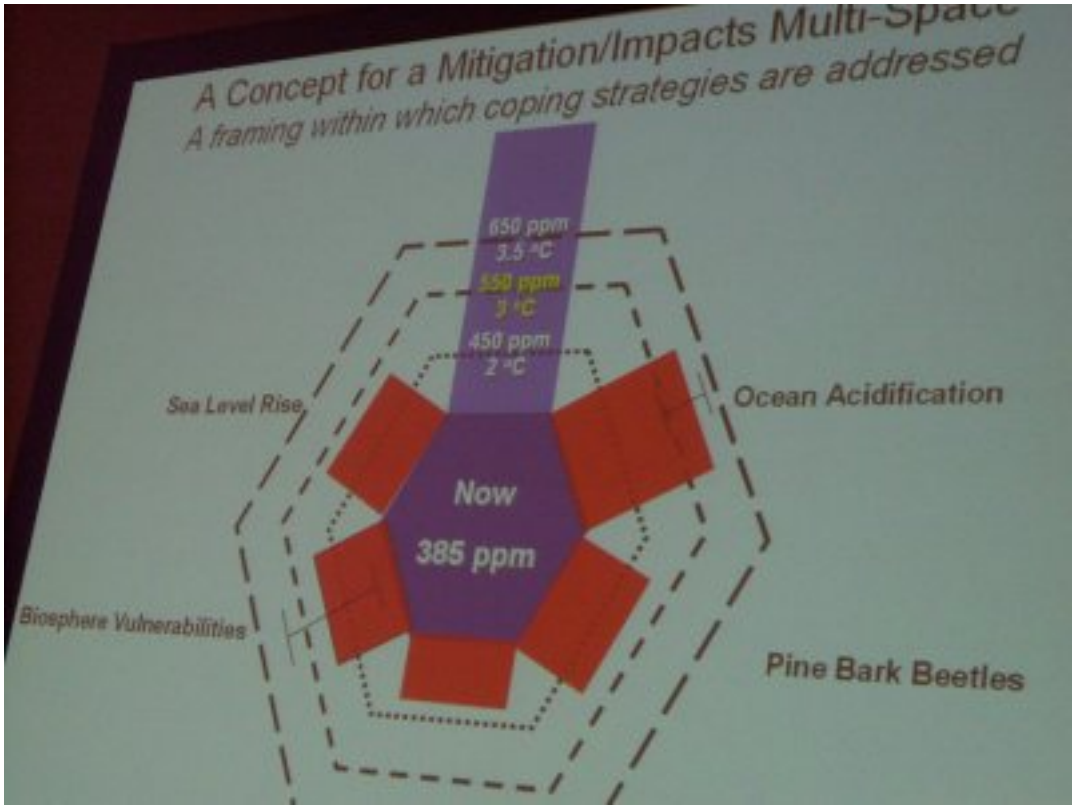
AGU 會議演講會場



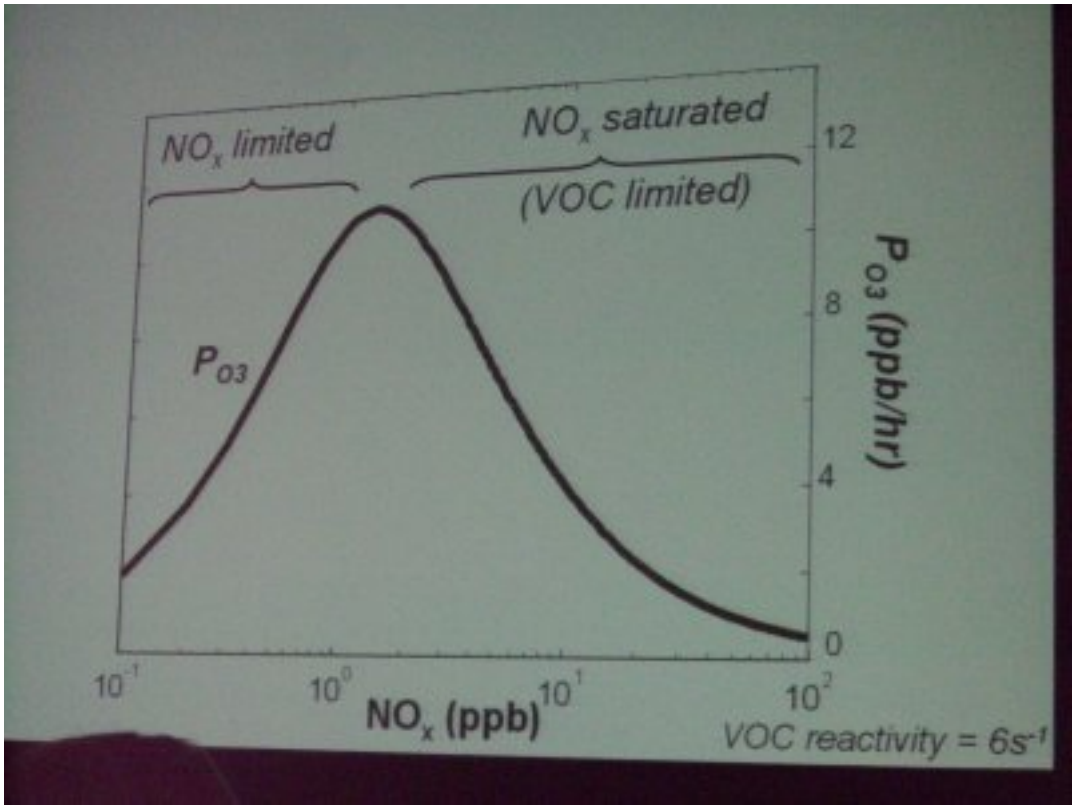
AGU 會議演講會場簡報



AGU 會議演講會場簡報



AGU 會議演講會場簡報



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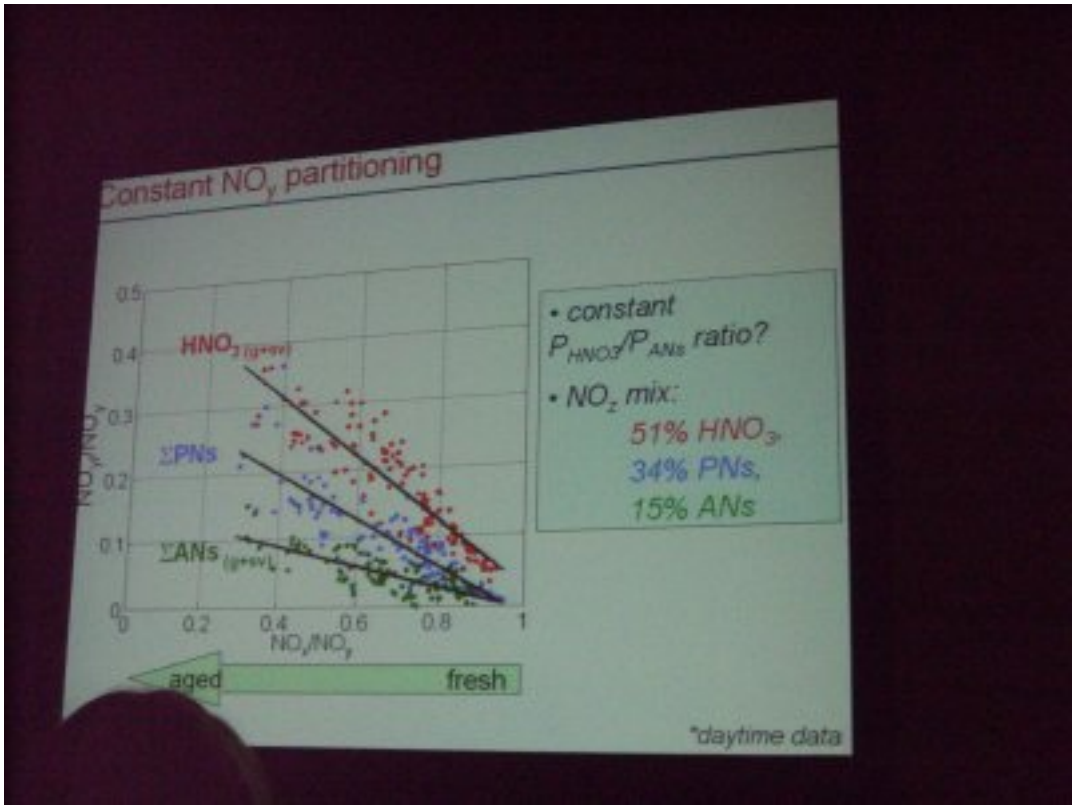

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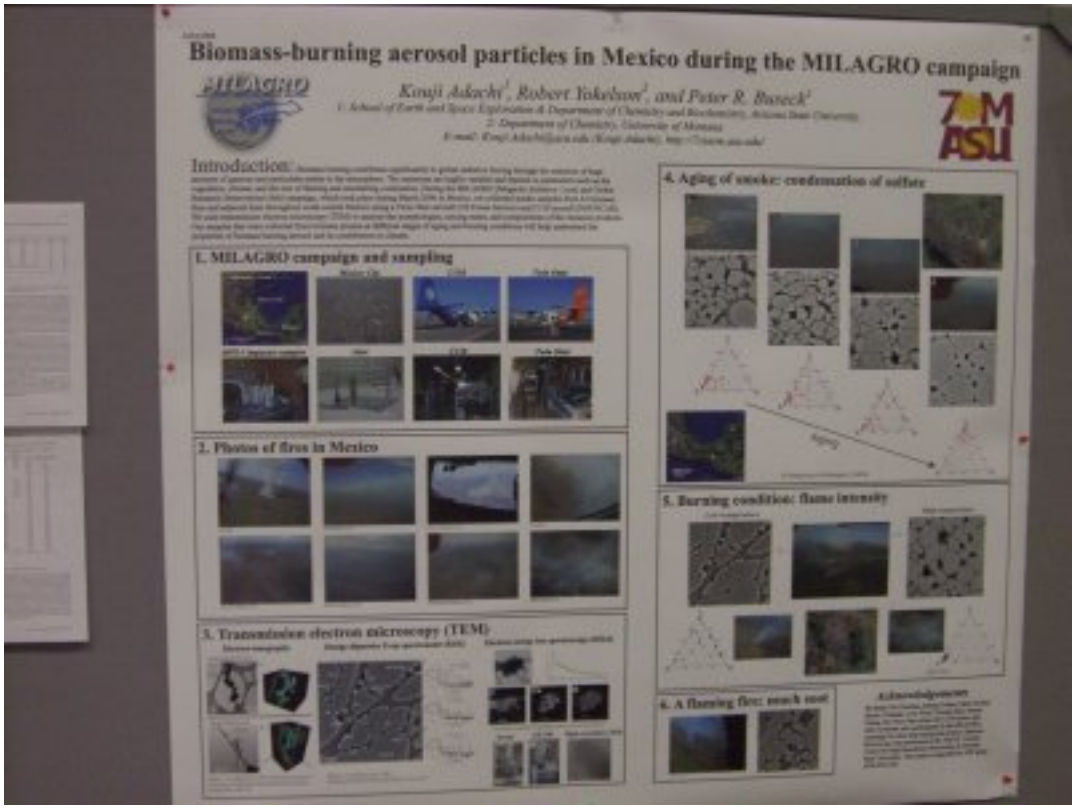
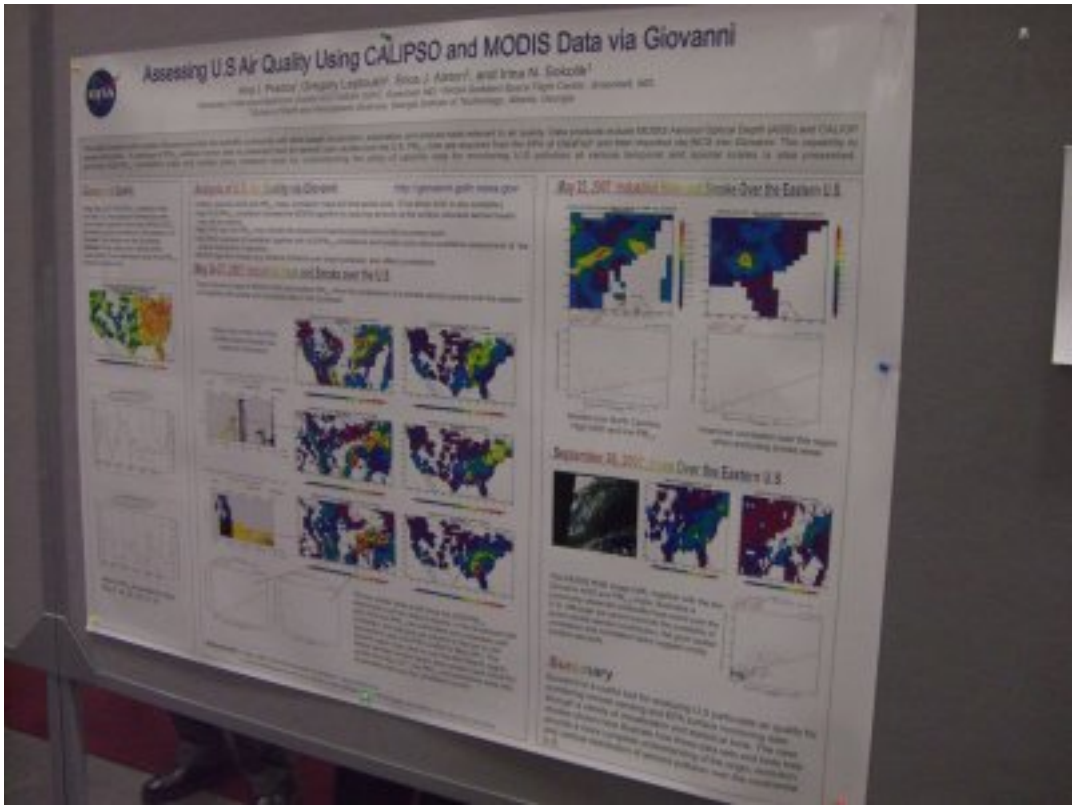
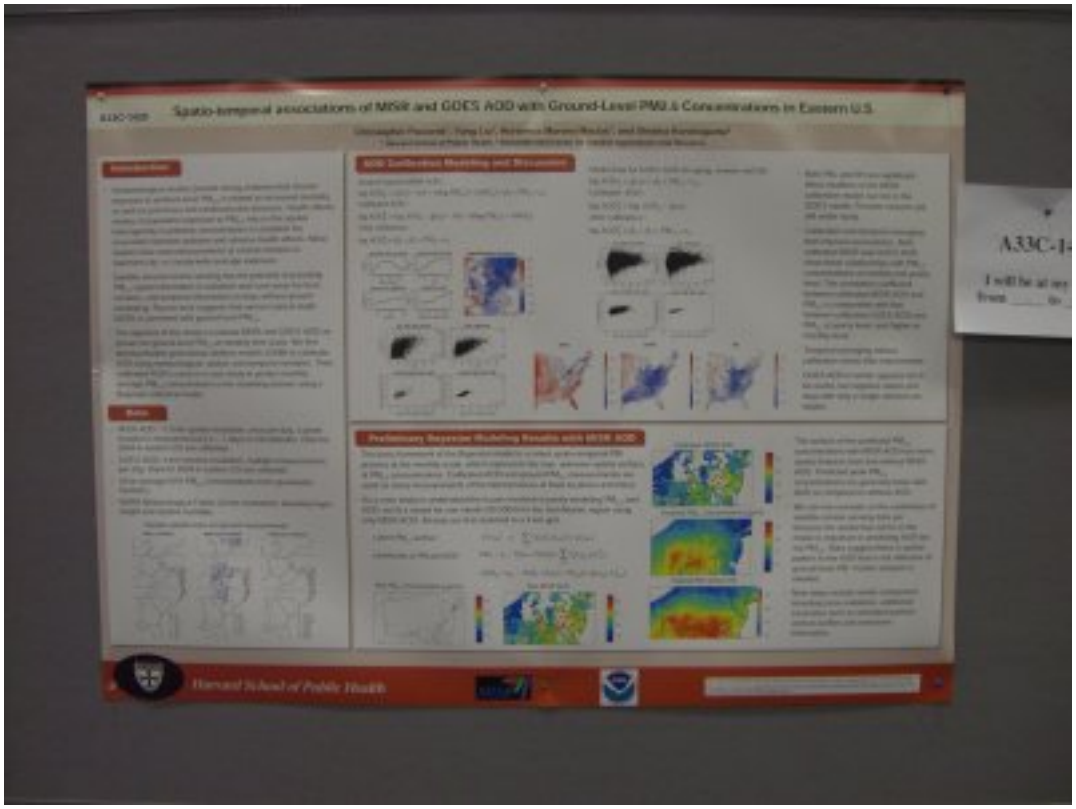


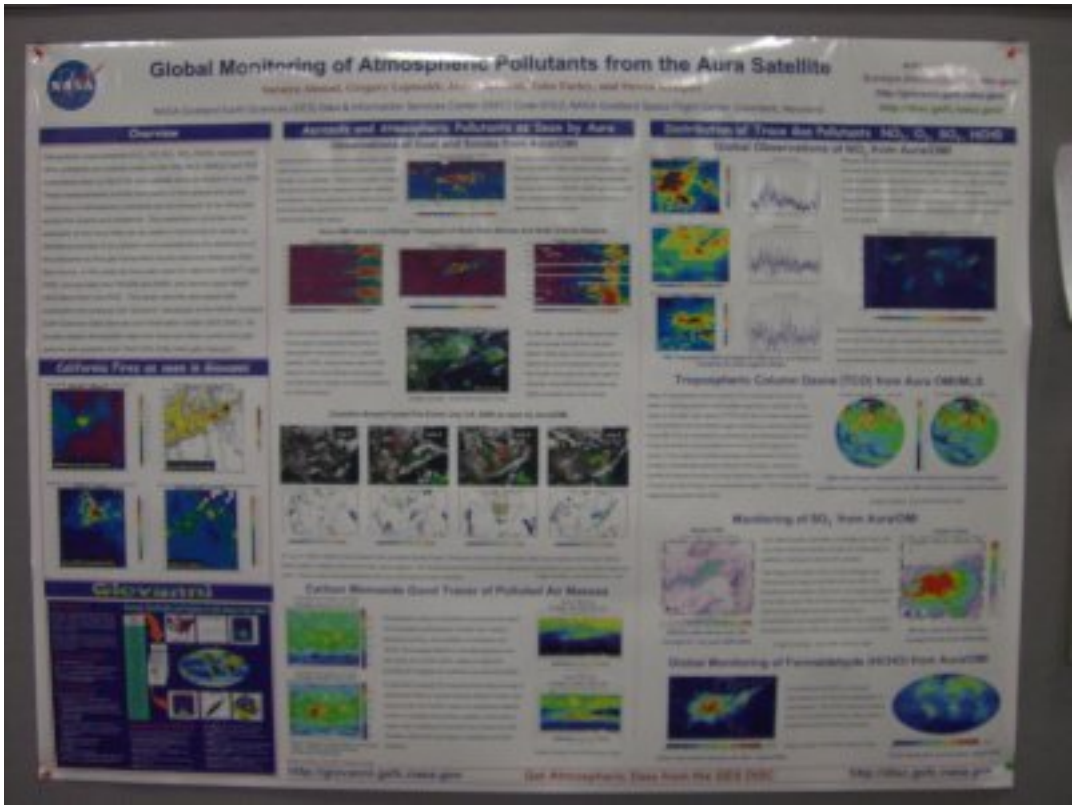
AGU 會議演講會場海報



AGU 會議演講會場海報



AGU 會議演講會場海報



AGU 會議演講會場海報

附件二

10 – 14 December 2007, Monday – Friday
Moscone West, 800 Howard Street
Moscone South, Howard Street (between 3rd and 4th streets)
San Francisco, CA, USA

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WELCOME! CELEBRATING 40 CONSECUTIVE YEARS IN SAN FRANCISCO

MARK YOUR CALENDAR TODAY to attend the 2007 AGU Fall Meeting!
The Fall Meeting is expected to draw a crowd of over 15,000 geophysicists from around the world. The Fall Meeting provides an opportunity for researchers, teachers, students, and consultants to present and review the latest issues affecting the Earth, the planets, and their environments in space. This meeting will cover topics in all areas of Earth and space sciences.

*** **LIVE WEBCASTS** *** **[NEW!]** Click events below at the times shown
(NOTE: You may need to turn off Popup Blocking if webcast window does not open)

Tuesday, 11 December

H22A *Langbein Lecture* [MS, Room 102] 1130h Pacific
Benchmarks in Hydrogeology in the 20th Century-Unexpected Payoffs
Presented by **Mary P. Anderson**, University of Wisconsin-Madison

Wednesday, 12 December

P33E *Whipple Lecture* [MS, Room 102] 1440h Pacific
The Importance of a Program of Mars Exploration
Presented by **Raymond E. Arvidson**, Washington University

U35A *Frontiers of Geophysics Lecture* [Marriott, Salon 7] 1815h - 1915h Pacific
Abrupt Climate Change and Our Future
Presented by **Lonnie Thompson**, Ohio State University

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SCIENTIFIC PROGRAM

Program

Burn Your Own Meeting CD [NEW!]

- Meeting-at-a-Glance: All sessions for the 2007 Fall Meeting are listed first by Section/Discipline and then by date within each section.
- Personal Meeting Itinerary: Select the sessions and events you plan to attend. Save, revise, and e-mail your itinerary to yourself or others.
- Scientific Abstracts: Search the complete 2007 Fall Meeting Database.
- Sessions by Section

Presenting Authors & Session Chairs

Oral Sessions

There are four 2-hour blocks of oral sessions each day.

Morning: 0800h - 1000h
1020h - 1220h
Afternoon: 1340h - 1540h
1600h - 1800h

Poster Sessions

Poster Sessions are active for one half day, although authors must put up displays between 0730h and 0800h in the morning and remove them between 1800h and 1830h.

Morning: 0800h - 1220h
Afternoon: 1340h - 1800h

AGU FALL MEETING

10 – 14 December 2007, Monday – Friday
Moscone West, 800 Howard Street
Moscone South, Howard Street (between 3rd and 4th streets)
San Francisco, CA, USA

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REGISTRATION

How to Register

The advance registration deadline—20 November—for the 2007 Fall Meeting has passed. You must register on - site. See the updated On - Site Rates table below. On - site registration will be located on the Level 1 of the Moscone West Convention Center during the following hours:

Sunday, 9 December: 1400h - 1830h
Monday, 10 December: 0700h - 1700h
Tuesday, 11 December: 0700h - 1700h
Wednesday, 12 December: 0730h - 1700h
Thursday, 13 December: 0730h - 1700h
Friday, 14 December: 0730h - 1400h

On This Page

Search the Directory of Registrants *—updated daily*

To view a complete listing, leave both input fields blank. Returning full results may be considerably slower than searching for individuals.

Last name begins with

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Housing & Travel

Housing Deadline: 9 November 2007

International travel to meetings in the U.S.

AGU staff advises anyone who may need a visa to attend an AGU meeting to apply early. Visa applicants should apply at least 3-4 months in advance of the meeting. Security-related policies have greatly increased the processing time for visa applications. U.S. consular officers now usually interview applicants as part of the application process.

If you need a letter of invitation, e-mail the Meetings Department at the AGU office to make your request (meetinginfo@agu.org).

General information about visas:

The National Academies maintains a Web site about visa-related issues and travel information for U.S. citizens and non-U.S. citizens.

- **Travel to the U.S.**
- **Travel from the U.S.**

The State Department maintains a Web site about U.S. visa policy and procedures.

- **Visa Waiver Program** (VWP) for visitors traveling to the U.S.
- **Visas for students and exchange visitors in the U.S.**

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Special Activities & Events

Sunday, 9 December

Union Wide Event

Ice Breaker
Moscone West
1700h - 1830h

Tuesday, 11 December

Section and Focus Group Events

Hydrology
Marriott Hotel, Salon 7
1230h - 1330h
Ticketed event: $30 per person, $15 student

Near Surface Geophysics
Marriott Hotel, Salons 1-4
1230h - 1330h
Ticketed event: $30 per person

Section Business Meetings and Receptions
Marriott Hotel, 1830h - 2000h

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EXHIBITS

Tuesday, 11 December through Friday, 14 December

Expand Your Marketing Power...

Exhibit at the Fall Meeting

Reach over 15,000 researchers, students, and consultants; and review the latest issues and studies of the Earth, the planets, and their environment in space.

Companies, publishers, government agencies, educational institutions, research facilities, scientific societies, and others will be exhibiting the latest in geophysical instruments, equipment, software, books and journals, minerals, fossils, and scientific programs at the Meeting.

- Exhibitor's Prospectus [PDF, 3.5MB] including Exhibitor/Contract.
- Exhibits Floorplan [PDF, 1.0MB] of the meeting exhibition hall.
- Interactive Exhibit Floor Map [HTML, 434 Bytes] (Requires Internet Explorer 7) *Updated 4 September 2007*
- Exhibitor Kit [, Bytes] [External Site] *Updated 6 November 2007*

AGU STAFF

Exhibits Coordinator

Dazzerine Hall

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MEETING SERVICES

AGU Booth

Monday through Thursday
0930h - 1800h
Friday
0930h - 1630h
Moscone South, Exhibit Hall B

Your headquarters for renewing your membership and journal subscriptions, purchasing AGU books, learning about upcoming meetings, obtaining information on sections and focus groups, and the Publications Resource Center. Also, AGU T-shirts will be on sale.

Business Center

Monday through Friday
Moscone West, Level 1 - Registration Hours
Moscone South - Exhibit Hours/p>

Moscone West provides business services, including photocopying, transparencies, fax transmission and receipt, overnight mail drop point, UPS, office supplies, and cellular telephone rental.

Child Care

Monday through Friday
0730h - 1830h
Moscone West, Level 3, Room 3024

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Education, Outreach, & Careers

Outreach Programs

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Programs for Teachers
Career Services
Programs for Students

Public Lecture

"How do Scientists Know Global Warming is Real and Serious?"

Monday, 10 December
San Francisco Marriott Hotel, Fourth and Mission Streets, Salon 9
1830h
Admission Free

Speaker: Richard C. J. Somerville of Scripps Institution of Oceanography at the University of California, San Diego and the Intergovernmental Panel on Climate Change.

Communicating With Congress Workshop

Thursday, 13 December
Moscone South 236
1230h - 1400h

Are you prepared to speak to your elected representative about science? This hands-on workshop will provide you with tips and techniques for speaking effectively about science to policy makers. Lunch will be served, but space is limited. No advance registration required.

Congressional Science Fellow 30th Anniversary Luncheon

Wednesday, 12 December
Moscone South 274-276
1230h - 1400h

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News Media Registration

The deadline for journalists to preregister online has now passed. Please register on-site at Moscone West. Look for the booth marked Media/Press Registration, which will be on the first level of the building. Do not get on the main registration lines.

See important Visa information if you are planning to attend Fall Meeting and are not a citizen or resident of the U.S.

For additional information, contact Peter Weiss

Media Advisories

- Advisory 1: News Media Registration Opens; Book Hotels Now; U.S. Visa Information for International Reporters
- Advisory 2: Abstracts and Sessions Now Online; Book Hotels By 9 November; NCSWA Holiday Party - Wed., 12 December
- Advisory 3: Preliminary Press Conference Topics; Delta Field Trip Preview; You're Invited! NCSWA Holiday Dinner
- Advisory 4: Final Press Conference List; Delta Field Trip Itinerary; Where To Pick Up Press Badges

Who's Coming

News Media Registrants - updated daily

* = confirmed for the field trip
** = wait listed for the field trip

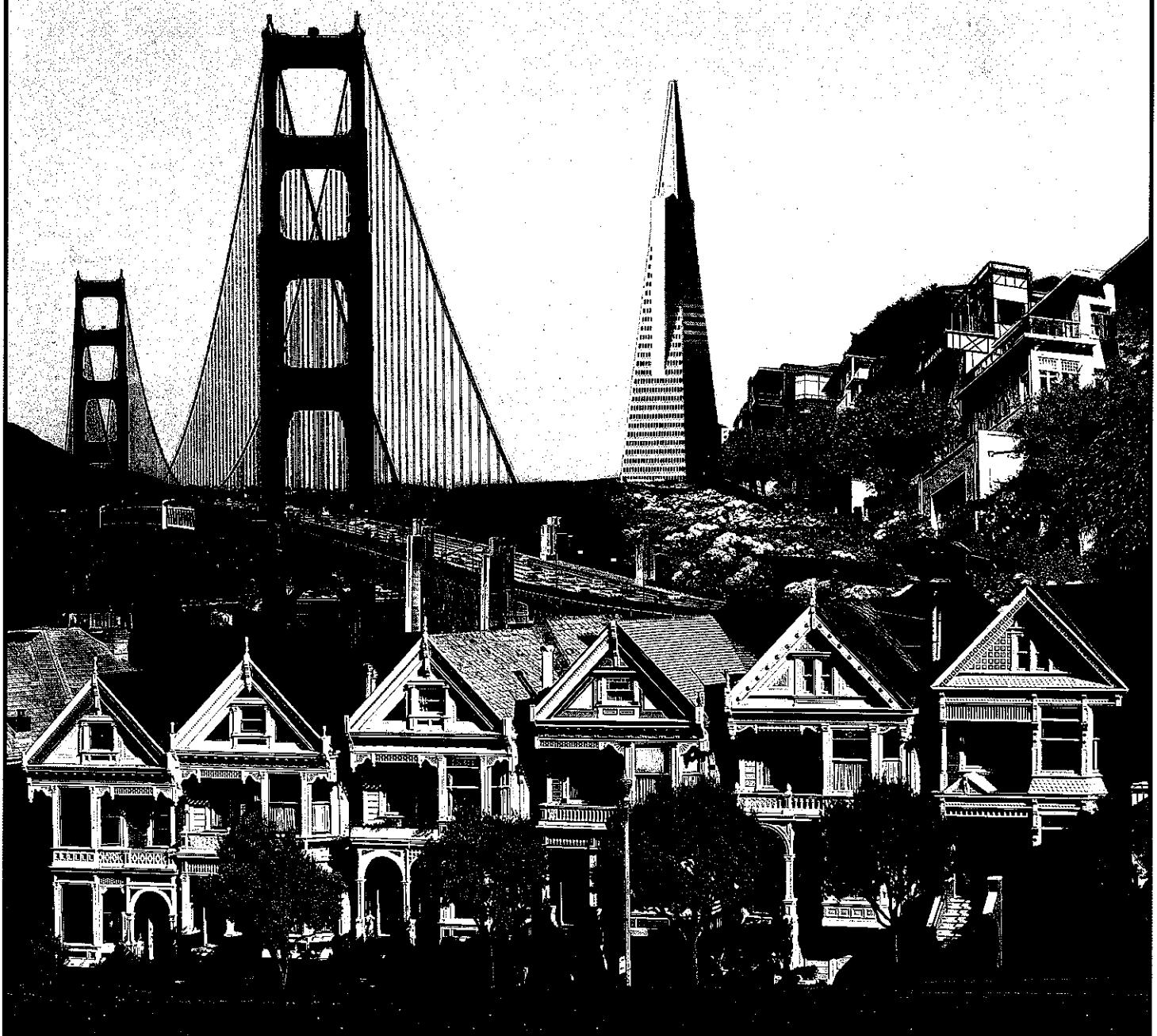
附件三

AGU FALL MEETING

10-14 DECEMBER 2007

40 YEARS IN SAN FRANCISCO

Since 1968



Author Index • Exhibits • Floor Plans • General Information
Meeting Summary Chart • Session Highlights

Registration, Session, Speaker Ready Room, and Exhibit Hours

Oral Sessions
Moscone South, Esplanade Ballroom and Gateway Rooms
Moscone West, Levels 2 and 3

Monday–Friday
0800h–1000h
1020h–1220h
1340h–1540h
1600h–1800h

Poster Sessions
Moscone South, Exhibit Hall B

Monday–Friday
0800h–1220h
1340h–1800h

Registration Hours

Sunday-Friday
Moscone West, Level 1

Sunday
1400h–1830h

Monday–Tuesday
0700h–1700h

Wednesday–Thursday
0730h–1700h

Friday
0730h–1400h

AGU Booth
Moscone South, Exhibit Hall B

Monday–Thursday,
0930h –1800h

Friday, 0930h –1630h

Academic Showcase
Moscone South, Exhibit Hall B

Tuesday–Thursday,
0930h–1800h

Friday, 0930h–1630h

Exhibits
Moscone South, Level 1

Tuesday–Thursday,
0930h –1800h

Friday, 0930h –1630h

Speaker Ready Room
Moscone West, Room 2001
Moscone South, Room 256

Sunday
1500h–1900h

Monday–Thursday
0700h–1800h

Friday
0700h–1500h

AGU Honors Evening

Wednesday, 12 December
Marriott Hotel, Salon 7, 1930h
- Ceremony, 1930h
- Banquet, 2100h

A short reception follows for those attending the ceremony.
A ticket is required for the Banquet: $55 per person.

AGU Council Meeting

Friday, 14 December
Westin San Francisco Market Street,
Metropolitan I, 1830h–2030h

Section and Focus Group Business Meetings and Social Events

Monday, 10 December

- **Near Surface Geophysics and Hydrogeophysics Technical Committee Reception**
  Hotel Utah
  500 4th Street at Bryant
  1815h

Tuesday, 11 December

Lunches

1230h–1330h at the Marriot Hotel
- Hydrology, Salon 7, 1230h - 1330h
  Ticket required: $30 per person, $15 student
- Near Surface Geophysics, Salons 1-4, 1230h - 1330h
  Ticket required: $30 per person

Business Meetings and Receptions

1830h–2000h at the Marriot Hotel
- Atmospheric and Space Electricity, Golden Gate C1
- Biogeosciences, Salons 3–6
- Cryosphere, Salon 7
- Earth and Space Sciences Informatics, Salons 10–13
- Geodesy, Golden Gate B2
- Geomagnetism and Paleomagnetism, Golden Gate C3
- Global Environmental Change, Salons 1–2
- Mineral and Rock Physics, Golden Gate A2–A3
- Ocean Sciences and Paleoceanography and Paleoclimatology, Salon 8
- Seismology, Study of the Earth's Deep Interior, and Tectonophysics, Golden Gate C2
- Volcanology, Geochemistry, and Petrology, Salon 9

Dinners

- **Atmospheric Sciences Chinese Banquet,**
  Empress of China Restaurant,
  838 Grant Avenue, 1900h–2200h,
  Ticket required: $35 per person, $15 student
- **Planetary Sciences Reception,**
  Empress of China Restaurant,
  838 Grant Avenue, 1900h–2200h,
  Ticket required: $25 per person
- **Space Physics and Aeronomy Dinner,**
  Neptunes Restaurant on Fisherman's Wharf, Pier 39,
  1930h–2200h,
  Ticket required: $50 per person

Meetings and Marketing Staff
Brenda Weaver, Director of Meetings;
Susanne Keeley, Meetings Manager
Melissa Markowitz, Meetings Coordinator;
Shermonta Grant, Meetings Coordinator;
Dazzerine Hall, Exhibits Coordinator.

Composition and Graphics Staff
Rochelle Seeney, Manager;
Carole Saylor, Travis Frazier,
Electronic Graphics Specialists.

Table of Contents

Oral Session Locations

- Moscone West —Levels 2 and 3
- Moscone South—Esplanade Ballroom and Gateway Rooms, Level 1

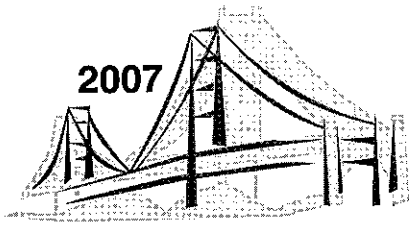
Posters and Exhibits

- Moscone South, Exhibit Hall B, Level 1

Union Sessions

Union sessions are for the benefit of meeting participants who have broad interests outside their own disciplines. Check the meeting schedule for a list of presenters, abstract titles, and session locations.

- **Union Agency Lecture Presentation by John H. Marburger III** (U15A, 1815h, Moscone South, Room 102)
- **Frontiers of Geophysics Lecture Presentation by Lonnie Thompson** (U35A, 1815h, Marriott Hotel, Salon 7)
- Chemical Geodynamics: The Road Ahead (U12A, U13C, U14A, U21B)
- Climate Sensitivity From Modeling, Current Observations, and Paleoclimate Data (U43A, U51B)
- Cooler Living in a Warming World (U41D, U42A, U43C)
- Earth in the Late Paleozoic: What Was the Paleogeographic, Paleoclimatic, and Paleoenvironmental Setting for the Mass Extinction? (U24C)
- Geosciences Research and Education in Developing Countries: Strengthening and Promoting International Collaboration (U33A)
- Geospatial Models: Real Science or Pretty Pictures? (U24A, U31A)
- Global Earth Observations: Looking 50 Years Back and 50 Years Forward (U23C, U31D, U32A)
- Hadean Times: From Magma Ocean Mode to Modern Geodynamic Regimes (U11A, U21D)
- Plate Reconstructions, Mantle Convection, and Tomography Models: A Complementary Vision of Earth's Interior (U13A, U34A)
- Progress in High-Latitude Research During the International Polar Year 2007-2008 (U24D, U31C)
- Quaternary Climate Records From the Continents: Comparisons With Their Marine and Polar Cousins (U13B, U21F, U22B)
- Results From the GRACE Prime Mission: Monitoring Water Transport in the Earth System Using Satellite Gravity Measurements (U21C, U24B)
- Scaling and Nonlinear Variability in Geophysical, Geochemical, and Geobiological Processes (U43B, U52A)
- Structure and Processes in the Lower Mantle and at the Core-Mantle Boundary (U41B, U44A)
- Subglacial Antarctic Lake Environments (SALE): A Unifying Phenomenon in Antarctic Earth Science (U23B, U31B)
- Terrestrial Impact Cratering: New Insights Into the Cratering Process From Geophysics and Geochemistry (U21E, U22A, U23A)
- The 2007 Sumatra Seismic Sequence (U51A, U53A, U54A)
- The Intergovernmental Panel on Climate Change 2007: Results and Responses (U41A, U43D)
- The Modern and Recent Arctic Environment (U33B, U41C)
- Whole or Layered Mantle Convection (U11B, U21A)



AGU FALL MEETING

10-14 DECEMBER • SAN FRANCISCO

40 years in San Francisco

Welcome to the 2007 AGU Fall Meeting

Nearly 14,000 presentations will be given at this meeting. Poster sessions and exhibits take place at Moscone South (MS) in Exhibit Hall B. Oral sessions are held in both Moscone West (MW) and Moscone South. Please pay close attention to the building information below when looking at the session schedule.

* MS = Moscone South
  4th and Howard Streets
* MW = Moscone West
  800 Howard Street

Program Information

Oral Session Hours

There are four 2-hour blocks of oral sessions each day:

Morning: 0800h–1000h
1020h–1220h

Afternoon: 1340h–1540h
1600h–1800h

Oral Session Locations

Moscone West (MW)—Levels 2 and 3
Moscone South (MS)—South Gateway Rooms and Esplanade Levels
See floor plans on pages 14–19 for room locations.

Poster Sessions

For maximum viewing times, authors must put up displays on the day of their presentation between 0730h and 0800h and remove them between 1800h and 1830h. Active poster session hours are:

Morning: 0800h –1220h
Afternoon: 1340h–1800h

Poster Session Location

Moscone South (MS)–Exhibit Hall B

The last four digits of each paper number indicate the poster board number. Please check the board number and its corresponding location.

How to Find Session Information

Meeting Summary
The Meeting Summary on pages 57–117 lists sessions by Section or Focus Group, by day, in a chart format. The summary provides session start times and locations, and also shows cosponsoring Sections or Focus Groups to help you locate all sessions of interest.

Meeting Highlights
Descriptions of some sessions are provided on pages 45–53.

Detailed Program
Once you have located sessions of interest, turn to the detailed session program by day. The title, time, and room number appear for each session, with a full list of titles and individual authors for each presentation within the session. Names of presenting authors are listed in boldface type.

Authors
Authors are listed alphabetically in the index (pages 119–208), followed by the abstract numbers of all papers they have authored or coauthored.

Abstracts
Abstracts appear electronically on the AGU Fall Meeting Web site. Information within abstracts is searchable using several search criteria. Abstracts are listed by discipline and in numerical order of presentation within each session.

Scientific Sessions

Union Sessions

Union sessions are for the benefit of participants who have broad interests outside their own disciplines. For descriptions of these sessions, turn to the Meeting Highlights on pages 45–53.

Union Lectures

Monday, 10 December

U15A *Union Agency Lecture*
MS, Room 102, 1815h
Reflections on the Science and Policy of Energy and Climate Change
Presented by **John H. Marburger, III**, Director, Office of Science and Technology Policy, Executive Office of the President

Wednesday, 12 December

U35A Frontiers of Geophysics Lecture
Marriott, Salon 7, 1815h–1915h
Abrupt Climate Change and Our Future
Presented by **Lonnie Thompson**, Ohio State University

Section and Focus Group Lectures

Bowie and Named Lectures
The Bowie Lecture Series was inaugurated in 1989 to commemorate the 50th presentation of the William Bowie Medal, which is AGU's highest honor and is named for AGU's first president. Bowie Lectures are distinguished below with an asterisk.

Tuesday, 11 December

V21F Bowen Lecture
MS, Room 102, 0855h
Physical and Chemical Properties of Melts Under Deep Earth Conditions and Their Importance in Geodynamics
Presented by **Eiji Ohtani**, Tohoku University
The Origin of the Moon and the Early History of the Earth Revisited
Presented by **Hugh S. O'Neill**, Australian National University

S22A Gutenberg Lecture*
MS, Room 102, 1020h
Persistent Behaviors of the Sunda Megathrust in Sumatra: Opportunities to Forecast Destructive Earthquakes
Presented by **Kerry Sieh**, California Institute of Technology

H22A Langbein Lecture*
MS, Room 102, 1130h
Benchmarks in Hydrogeology in the 20th Century—Unexpected Payoffs
Presented by **Mary P. Anderson**, University of Wisconsin-Madison

NG23A Lorenz Lecture
MS, Room 102, 1450h
Role of Fractals in Solid Earth Geophysics
Presented by **Vijay Prasad Dimri**, National Geophysical Research Institute

PP24A Emiliani Lecture
MW, Room 2007, 1600h
Changes in Attitude on Equatorial Latitudes: Tropical Climate Evolution During the Ice Ages
Presented by **David W. Lea**, University of California

C24A Nye Lecture
MS, Room 102, 1600h
Arctic Climate Change: Where Reality Exceeds Expectations
Presented by **Mark C. Serreze**, CIRES/NSIDC

SA24B Nicolet Lecture*
MS, Room 308, 1650h
Geospace Imaging: The Big Picture
Presented by **Robert R. Meier,** George Mason University

T24A Birch Lecture*
MS, Room 102, 1710h
Mountain Ranges and the Deformation of Continents
Presented by **Jean-Philippe Avouac,** California Institute of Technology

G24B Bowie Lecture*
MW, Room 2007, 1710h
High-Rate GPS: Earthquakes, Ice Sheets, and Volcanoes
Presented by **Kristine M. Larson,** University of Colorado

Wednesday, 12 December

A33I Bjerknes Lecture*
MS, Room 102, 1230h
A Review of Stratospheric Ozone Depletion, and Some Linkages and Parallels to Climate Change
Presented by **Susan Solomon,** NOAA

P33D Shoemaker Lecture*
MS, Room 102, 1340h
The Geology of Mars as Seen by MRO's HiRISE
Presented by **Alfred S. McEwen,** University of Arizona

P33E Whipple Lecture
MS, Room 102, 1440h
The Importance of a Program of Mars Exploration
Presented by **Raymond E. Arvidson,** Washington University

GP34B Bullard Lecture
MS, Room 102, 1700h
On the Trail of Bullard's Dynamo
Presented by **Peter Olson,** Johns Hopkins University

Thursday, 13 December

P45A Sagan Lecture
MS, Room 102, 1830h
Exploring Titan, An Earth-like Organic Paradise
Presented by **Ralph D. Lorenz,** Johns Hopkins University

Social Activities and Events

Sunday, 9 December

Ice Breaker
Moscone West
1700h–1830h

Section and Focus Group Events

Monday, 10 December

Near Surface Geophysics and Hydrogeophysics Technical Committee Reception
Hotel Utah
500 4th Street at Bryant
1815h

Tuesday, 11 December

Lunches

Hydrology
Marriott Hotel, Salon 7
1230h–1330h
Ticketed event: $30 per person

Near Surface Geophysics
Marriott Hotel, Salons 1-4
1230h–1330h
Ticketed event: $30 per person

Section Business Meetings and Receptions

Marriott Hotel, 1830h–2000h

- Atmospheric and Space Electricity
  Marriott Hotel, Golden Gate C1
- Biogeosciences
  Marriott Hotel, Salons 3-6
- Cryosphere
  Marriott Hotel, Salon 7
- Earth and Space Science Informatics
  Marriott Hotel, Salon 10-13
- Geodesy
  Marriott Hotel, Golden Gate B2
  Sponsor: UNAVCO
- Geomagnetism and Paleomagnetism
  Marriott Hotel, Golden Gate C3
  Sponsors: William Goree, Inc.
  2G Enterprises
- Global Environmental Change
  Marriott Hotel, Salons 1-2
- Mineral and Rock Physics
  Marriott Hotel, Golden Gates A2-A3
- Ocean Sciences and Paleoceanography and Paleoclimatology
  Marriott Hotel, Salon 8
- Seismology, Tectonophysics, and Study of the Earth's Deep Interior
  Marriott Hotel, Golden Gate C2
- Volcanology, Geochemistry, and Petrology
  Marriott Hotel, Salon 9

Dinners

Atmospheric Sciences Chinese Banquet
Empress of China Restaurant
838 Grant Avenue
1900h–2100h
Ticketed event: $35 per person

Planetary Sciences Reception
Empress of China Restaurant
1838 Grant Avenue
900h–2100h
Ticketed event: $25 per person

Space Physics and Aeronomy Dinner
Neptune's Restaurant
Fisherman's Wharf, Pier 39
1930h–2200h
Ticketed event: $50 per person

Union Events

AGU Honors Evening

The Honors Evening will highlight the accomplishments of scientists in all fields of geophysics. Pay tribute to the 2007 AGU medalists honored at this event by participating in the following activities:

Wednesday, 12 December

Honors Ceremony

Marriott Hotel, Salon 7, 1930h
A short reception follows for those attending the ceremony.

Honors Banquet

Marriott Hotel, Salon 9, 2100h
Ticketed event: $55 per person

AGU Council Meeting

Friday, 14 December
Westin San Francisco Market Street, Metropolitan I
1830h–2030h

Meeting Services

Registration

Moscone West, Level 1
All attendees must register and wear badges while attending all Fall Meeting functions.

Registration Hours

Sunday, 9 December:
1400h–1830h

Monday, 10 December:
0700h–1700h

Tuesday, 11 December:
0700h–1700h

Wednesday, 12 December:
0730h–1700h

Thursday, 13 December:
0730h–1700h

Friday, 14 December:
0730h–1400h

Exhibits
Tuesday–Thursday, 0930h–1800h
Friday, 0930h–1630h
Moscone South, Exhibit Hall B
See pages 25–39 for a complete list of exhibitors.

AGU Booth
Monday–Thursday, 0930h–1800h
Friday, 0930h –1630h
Moscone South, Exhibit Hall B

Academic Showcase
Monday–Thursday, 0930h–1800h
Friday, 0930h–1630h
Moscone South, Exhibit Hall B
See pages 43–44 for a listing of Academic Showcase participants.

Business Center
Monday–Friday
Moscone West, Level 1
0800h–1800h
Moscone South–Outside Exhibit Hall B

Moscone Center provides business services, including photocopying, transparencies, fax transmission and receipt, overnight mail drop point, UPS, office supplies, and cellular telephone rental.

Career Center
Monday–Friday
Moscone South, Exhibit Hall B
0830h–1800h

AGU continues its acclaimed and successful Career Center, a valuable resource for employment positions, current career information, and the latest data on employment trends in the geosciences.

Child Care
Monday–Friday
0730h–1830h
Moscone West, Level 3, Room 3024

KiddieCorp provides a professional children's program at the meeting. Fees are $7 per hour, per child for children ages 6 months through 12 years, and $9 per hour per child for children under 6 months. Children must be registered for a minimum of two consecutive hours per child per day. For more information, please contact KiddieCorp by phone at +1-858-455-1718. Child care services are a contractual agreement between each individual and the child care company. AGU assumes no responsibility for the services rendered.

Coat Check
Monday–Friday
0730h–1830h
Moscone West and Moscone South
There is a charge of $2.00 per piece to check items.

Donor Circle Lounge
Monday–Friday
0700h–1800h
Moscone South, Room 200

The Donor Circle Lounge offers a quiet atmosphere for Supporting Members and special AGU guests to start the morning, unwind in the afternoon, mingle, prepare for a presentation, and check e-mail. There is ready access to telephones, computers, printers, the Internet, newspapers, and a message board.

E-Mail Center
Monday–Friday
Moscone West, Level 1
Moscone South, Level 1, Exhibit Hall B

First Aid
Monday–Friday
0800h–1800h
Moscone West, Level 1
Moscone South, next to Room 300

A registered nurse will be on call during regular meeting hours to provide basic first aid services and supply items such as Band-Aids, acetaminophen, etc.

Guests
Guests or spouses not attending the scientific sessions may register at the meeting at no charge. A guest is a spouse, friend, or adult child (18 years old and over) who is not working in a geophysical sciences-related occupation or field. A colleague or an associate working in a related geophysical sciences field or studying geophysics in school may not use the Guest Registration category. Registered guests may go to the Exhibits and attend and purchase tickets to social events at the advertised rates.

Message and Information Center
Moscone West, Level 2
Sunday, 1400h–1830h
Monday–Thursday, 0730h–1800h
Friday, 0730h–1700h
Phone: +1.415.348.4421
Fax: +1.415.348.4425

This central information center is accessible to anyone trying to contact meeting attendees. Messages can be left at the number listed above. Telephone messages will be posted on message boards. Incoming faxes should be sent to the fax number listed above. Faxes will be received and a message will be placed on the message boards for the recipient. Please check these boards regularly in case other attendees are trying to reach you. Individuals cannot be paged. Outside of registration hours it is recommended that messages be left at the attendee's hotel. Names and phone numbers of hotels are listed under Hotels on page 13.

Press Room
Monday–Thursday
0730h–1800h
Friday
0730h–1600h
Moscone West, Room 2012

AGU operates a newsroom and holds news conferences as part of this international meeting. News releases and copies of journal articles about research being presented at the meeting are made available to reporters in the newsroom. For information, call +1.415.348.4440.

Refreshments
Moscone South
Exhibit Hall B
1000h–1100h coffee and soft drinks
1530h–1630h coffee, soft drinks, and beer

Esplanade Ballroom
Coffee and soft drinks
1000h–1030h
1530h–1600h

Moscone West, Level 1
Refreshments
1000h –1100h
1530h–1630h

Shuttle Bus Service
Shuttle service will be provided during the following hours to and from the following hotels: Cathedral Hill, Crowne Plaza, Hilton, Holiday Inn Gateway, Hotel Nikko, Mark Hopkins, Parc Fifty Five, and the Westin St. Francis.

Sunday, 9 December: 1400h–1900h

Monday, 10 December: 0700h–0930h and 1700h–1930h

Tuesday, 11 December: 0700h–0930h and 1700h–1930h

Wednesday, 12 December: 0700h–0930h and 1700h–1930h

Thursday, 13 December: 0700h–0930h and 1700h–1930h

Friday, 14 December: 0700h–0930h and 1600h–1900h
Schedules and pickup locations are posted in all hotel lobbies and at the Moscone Convention Center. Hotels in the Union Square area are about a 10-15 minute walk to Moscone Center.

Speaker Ready Room
Sunday–Friday
Moscone West, Room 2001
Moscone South, Room 256
Sunday, 9 December
1500h–1900h
Monday, 10 December
0700h–1800h
Tuesday, 11 December
0700h–1800h
Wednesday, 12 December
0700h–1800h
Thursday, 13 December
0700h–1800h
Friday, 14 December
0700h–1500h
ALL speakers are required to check into the Speaker Ready Room at least 24 hours before their presentations. Those presenting on Monday, 10 December must check in on Sunday, 9 December between 1500h and 1900h.

Special Needs
If you have special needs, the AGU staff will work with its vendors to provide you reasonable support. Contact an AGU staff person at +1.415.348.4421, or at the Facilities Desk in Moscone South, Exhibit Hall B, Level 1, or in the registration area in Moscone West.

Wireless Network
Monday–Friday
0730h–1800h
Moscone South, Exhibit Hall B
Moscone West, Levels 1 and 2

Wireless access is available in these areas of the convention center if your laptop is equipped with a Wi-Fi or 802.11B wireless network card (PC) or airport card (Macintosh).

2007 Fall Meeting Program Committee

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Terry Plank, Boston University, Boston, MA; E-mail: tplank@bu.edu

The Congressional Science Fellow Program

30TH ANNIVERSARY

Wednesday, 12 December, 1230h-1400h - Moscone South 274-276

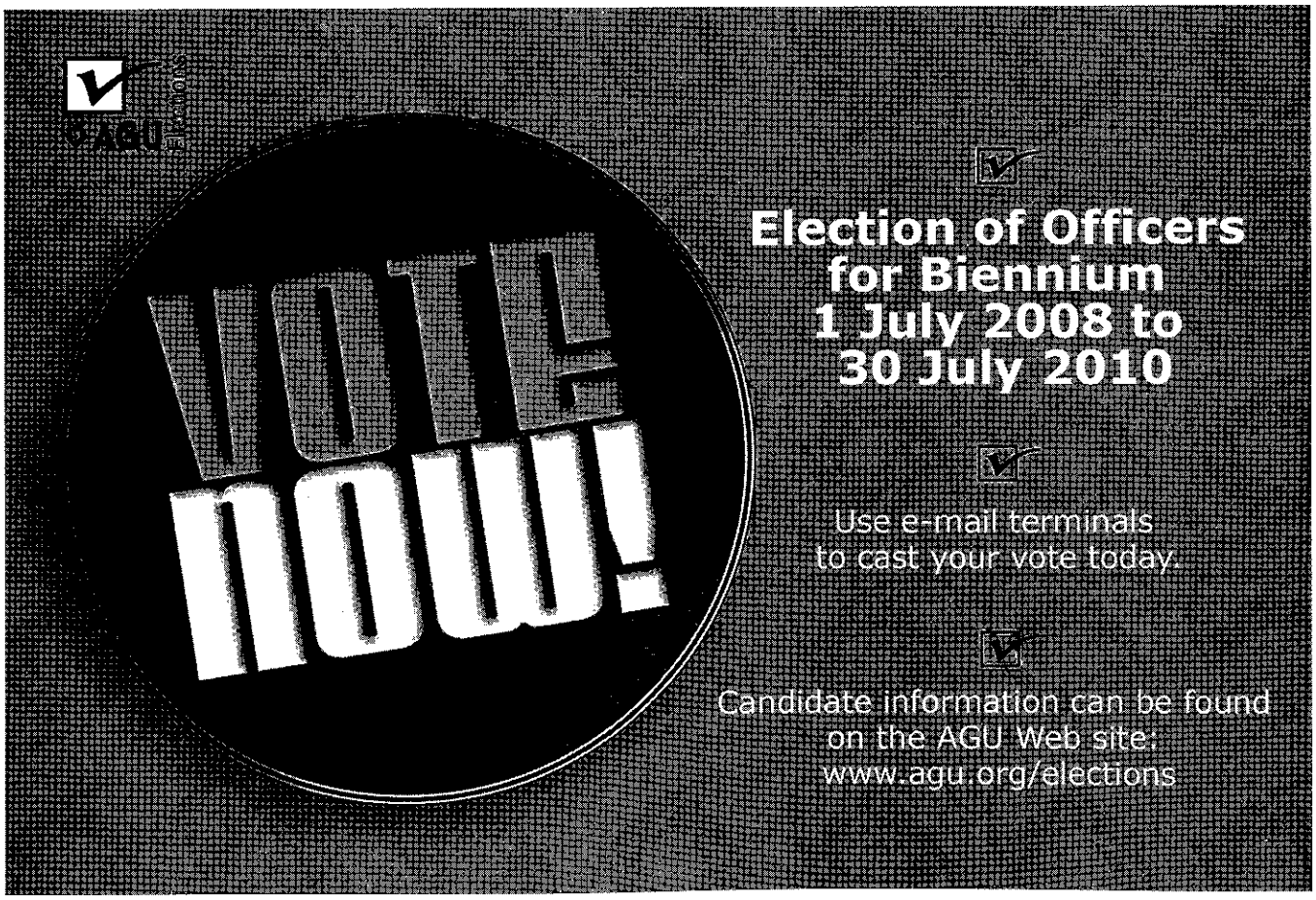
Come celebrate more than 30 years of service to Congress by AGU Congressional Science Fellows who worked as science advisors to Congressional committees or to House or Senate members.

Many former AGU Congressional Science Fellows have gone on to distinguished careers in science and policy - in the federal government, academia, non-profits, and corporations. A panel of four former Fellows will discuss their experiences on "The Hill" and how serving Congress influenced their lives and careers.

Information will be provided for those who are interested in learning how you can become a Fellow and use your science background to help shape science policy on Capitol Hill.

Lunch will be provided on a first-come, first-serve basis.

LEARN HOW TO BECOME A CONGRESSIONAL SCIENCE FELLOW



Town Hall Meetings

Monday, 10 December

***Marcus Langseth* Science Oversight Committee**
Moscone West, Room 3002, 1930h

R/V *Marcus Langseth* is scheduled to begin operation in 2008. The ship will provide the U.S. academic community with the resources to acquire two- and three-dimensional marine seismic-reflection data. No other ship in the UNOLS fleet approaches the seismic acquisition capabilities of this vessel, and consequently the *Langseth* represents a unique national resource. This Town Hall meeting will report on the status, testing, and planned operations of the vessel. Persons interested in marine geophysical data collection and related oceanographic research are invited to attend. The public is also welcome.

Moving Toward an Arctic Synthesis Collaboratory
Moscone West, Room 3004, 1930h

This Town Hall meeting seeks community input for developing an Arctic Synthesis Collaboratory, a concept arising from a 2007 workshop and other discussions in the Arctic research community. The collaboratory concept is an "umbrella" framework that fosters interactions among Arctic scientists and other stakeholders; integrates data analysis and modeling; develops outreach, education, and policy-relevant resources; and provides training and professional development. Services could be established virtually and also could take advantage of existing facilities. The Collaboratory would serve as a partnership-building mechanism across the many communities served. The Town Hall meeting will focus on community needs and organizational and implementation issues.

NASA Science Mission Directorate
Moscone West, Room 3005, 1930h

Alan Stern, associate administrator for NASA's Science Mission Directorate (SMD), will describe NASA's Earth and Space Science Program, with emphasis on its new directions and challenges. He will be joined by senior SMD staff to provide information on specific program elements and initiatives.

NOAA's Future Operational Earth Observation Satellites
Moscone West, Room 3006, 1930h

The National Polar-orbiting Operational Environmental Satellite System (NPOESS) and the Geostationary Operational Environmental Satellite (GOES)-R programs represent the nation's next-generation satellites for operational, space-based remote sensing of the Earth system. These complementary satellite systems will provide higher-resolution, more accurate, and more timely real-time data to improve weather forecasts, monitor the space environment, and provide long-term observations for climate studies. This Town Hall meeting will allow NOAA leadership to discuss the current status of NPOESS and GOES-R and solicit input from the AGU membership to provide input to the agency's requirements process.

Open Forum Meeting for the International Polar Year 2007–2008
Moscone West, Room 3003, 1930h

IPY 2007–2008 is the largest coordinated program of its kind in the past 50 years, and the 2007 AGU Fall Meeting has over 40 sessions devoted to polar activities occurring during the IPY. There have been regular Open Meetings where IPY management can exchange views with and update the international IPY community. Most have been in Europe but in 2006 an Open Meeting was held in Australia. AGU offers a first opportunity for the broad U.S. community to meet IPY organizers and have an open discussion on how IPY is viewed in the United States and how it can be developed further.

Tuesday, 11 December

Solar Planetary and Aeronomy Town Hall Meeting
Moscone South, Room 308, 1815h

Speakers: R. Behnke, NSF, Division of Atmospheric Sciences and R. Fisher, NASA, The Sun-Earth Connection Division

Thursday, 13 December

A Survey of the Scientific Use of the Radio Spectrum
Moscone West, Room 3004, 1930h

The growing implementation of wireless technologies has led to discussions in the government about changing spectrum allocation and use practices. Scientific users such as remote sensing researchers have an important stake in the policies that may result. The National Academies have convened a committee charged with developing a report that identifies those scientific research areas requiring quiet spectrum. The report will bear directly upon remote sensing research. The Town Hall meeting will enable communication with the affected Earth science community to discuss its concerns and collect its input. http://www7.nationalacademies.org/bpa/Spectrum_Study_Home.html

Antarctic Climate Evolution
Moscone West, Room 3009, 1930h

Antarctic Climate Evolution (ACE) is a new international initiative that promotes the exchange of data and ideas between research groups focusing on the evolution of Antarctica's climate system and ice sheet. ACE facilitates scientific exchange between the modeling and data acquisition communities for the purposes of project development and hypothesis testing. The goals of the program are to assess the climate and glacial history of Antarctica, to identify the processes that govern Antarctic change, and to understand how Antarctic climate change feeds back on the rest of the globe. ACE welcomes new participants. This Town Hall meeting is designed to inform the community about ACE opportunities during and beyond the IPY, including major new drilling efforts through ANDRILL and IODP, as well as through ice sheet and climate modeling programs.

Arctic Marine Shipping Assessment of the Arctic Council: A Call to the Arctic Research Community
Moscone West, Room 3006, 1930h

The Arctic is experiencing extraordinary changes. The Arctic's sea ice cover is undergoing an historic transformation (a retreat) and multiple marine users are voyaging to the Arctic Ocean in unprecedented numbers, driven in part by natural resource development, marine research, and tourism. In response, the Arctic Council is conducting an Arctic Marine Shipping Assessment (AMSA), led by Canada, Finland, and the United States, to be completed by spring 2009. Driving the assessment are issues of sustainable development, marine safety, and environmental protection. The U.S. AMSA team seeks to (1) brief the broad scientific community on AMSA's research strategy, key elements, and status; (2) facilitate a discussion on AMSA's

research needs and required scientific expertise; and (3) learn of recent Arctic research that can be used to enhance AMSA's findings to the eight Arctic states. The target audience includes climate, ocean, and cryosphere researchers; Arctic research program managers; and polar ship operators and managers.

Comet Surface Sample Return Outreach
Moscone West, Room 3010, 1930h

NASA is investigating the feasibility of a Comet Surface Sample Return (CSSR) mission in advance of the next New Frontiers Announcement of Opportunity, which could be released as early as the fall of 2008. NASA has tasked the Johns Hopkins University Applied Physics Laboratory (APL) to lead a detailed study to determine whether a CSSR mission is indeed a viable candidate for New Frontiers. NASA has also formed a CSSR Science Definition Team (SDT) to define the scientific objectives of a CSSR mission and work with the APL technical team to design a mission concept that can achieve those objectives. In order to collect ideas, advice, and comments from the broader planetary community, the SDT is hosting this outreach session. Please bring your ideas to this meeting so that we can help pave the way to a NASA mission that will return to Earth for laboratory investigation some of the solar system's most primitive material.

EarthScope: Planning, Products, and the Public
Moscone West, Room 3003, 1900h

This year 2007 saw a number of milestones in EarthScope's transition from a facilities construction project to a set of ongoing geophysical observatories. The objective of this Town Hall meeting is to bring together the EarthScope science community to discuss science plans, development of "products" based on data acquired by EarthScope, and strategies for using EarthScope results to enhance public understanding of natural hazards and geodynamics.

Geomorphology and Land-Use Dynamics at NSF
Moscone West, Room 3002, 1930h

The Geomorphology and Land-Use Dynamics (GLD) program within the Division of Earth Sciences (EAR) at the NSF will provide its third Annual Report to the research community. This includes a summary of projects currently supported by the GLD program and placed in the context of an intellectually balanced program, a summary of Earth surface process projects supported within the NSF (e.g., Critical Zone Observatories, National Center for Earth Surface Dynamics, etc.), and a summary of funding opportunities for Earth surface process research within EAR and elsewhere at the NSF. Time will be provided for questions from the research.

GEO Vision: Updating GEO 2000, a Long-Range Plan for the NSF Geosciences
Moscone West, Room 3001, 1930h

As part of its duties to provide input into long-range planning and partnership opportunities, the NSF Advisory Committee for the Geosciences established the GEO Vision Working Group. This group is charged with developing a plan that recognizes and incorporates new opportunities in the geosciences as well as emerging technological developments. This plan will update GEO 2000, published in 1999. The working group seeks to incorporate a wide spectrum of views and proposes holding a Town Hall meeting to solicit input from the broad geosciences research community.

Group on Earth Observations (GEO): Outcomes From the 2007 GEO Ministerial Summit and USGEO Initiatives
Moscone West, Room 3005, 1930h

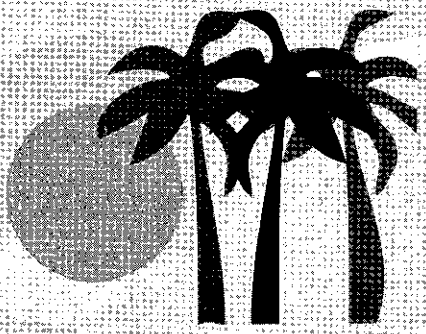
The international Group on Earth Observations (GEO) involves 72 countries and 46 participating organizations to establish a Global Earth Observation System of Systems (GEOSS) to provide comprehensive, coordinated Earth observations from thousands of ground, airborne, and space-based instruments. As a ministerial-level organization, GEO represents a two-way dialog with policy makers on the importance of Earth observations to science and societal benefits. The U.S. Group on Earth Observations (USGEO) coordinates U.S. government contributions to GEO. In this Town Hall Meeting, U.S. government officials will present news and results from the 30 November 2007 GEO Ministerial summit in Cape Town, South Africa. They will discuss major GEO achievements, U.S. contributions to GEO, and the U.S. proposals announced at the Summit. In addition, they will talk about an emerging U.S. Earth Observation policy and an Earth Observation assessment that USGEO is developing.

Ocean Observatories Initiative: Advanced Planning and Opportunities
Moscone West, Room 3007, 1930h

The National Science Foundation's Ocean Observatories Initiative (OOI) continues to gather momentum. A Preliminary Network Design Review was held in early December 2007, with expected National Science Board review in spring 2008. The OOI Network team is now in place, with University of California, San Diego, Woods Hole Oceanographic Institution, and the University of Washington leading groups of academic and industry partners. This Town Hall meeting will update attendees on the status of the planning process, gather feedback, and answer questions about future steps in the development of this important new research capability.

Progress on Development of a National Geoinformatics System
Moscone West, Room 3003, 1930h

This Town Hall meeting will make further progress toward building community support and understanding of a National Geoinformatics System (NGS). As articulated at an NSF-funded workshop (March 2007), the NGS is envisioned as a virtual system that allows easy integration of information across databases and use of Web tools in an efficient and comprehensive way to attain the synergies offered by Geoinformatics and foster the next generation of transformative science. The meeting will bring together stakeholders and interested parties to discuss a potential governance structure, further identify important participants, and address issues of interoperability and the culture of collaboration.



2008 JOINT ASSEMBLY

27 – 30 MAY · FORT LAUDERDALE, FLORIDA

The 2008 Joint Assembly is a partnership among AGU, AAGG, ALACIT, CIGMEX, GS, LATINMAG, MSA, SBGf, SEG, SPD/AAS, UMEC, CERESIS, UGM, and SGCH.

The Program Committee is developing a Union-wide science program that will cover topics in all areas of the Earth and space sciences. Located in sunny Florida the Joint Assembly is sure to offer exciting sessions and a great atmosphere.

Submit Your Abstracts Today!

Deadline for Abstract Submissions:

5 March 2008

Submitted not later than 2359 UT

For more information about the meeting, or for details about sessions, speakers, and deadlines, check the Web site at

www.agu.org/meetings/ja08

20 Great restaurants within 10 minutes walk *by the Epicenticures**

(if the 415 telephone number is listed, we recommend you make reservations for dinner or for large lunch groups)

** Ross Stein & Paul Spudich*

AF ***AG Ferrari Foods*** *Great sandwiches, made to order. Tight on space* ★★ $

AN ***Annabelle's*** *Traditional SF grill. Noisy, crowded, good food and fun scene* ★★ $$

AR ***Armani's Cafe*** *Hip and inviting food bar downstairs & seating upstairs in elegant historic bank bldg* ★★ $$

AZ ***Azie*** *Chic French food with asian overtones. Quiet and a good bet if Lulu's is packed 538-0918* ★★★ $$$

CA ***Cha Am*** *Ever popular Thai restaurant. The food beats the ambiance* ★★ $

CD ***Canton Dim Sum*** *Delectable Chinese appetizers on carts whizzing by; can also order by menu. Noisy* ★★ $

CH ***Chaat Cafe*** *Tandoori wraps and Indian appetizer specialties. Popular spot* ★★ $

CM ***Caffé Museo*** *Sandwiches, soups, pizza in a smart setting, indoor/outdoor dining, noisy but good* ★★ $

ER ***Emporio Rulli*** *Great for coffee, pastries, crowd watching, but small selection of sandwiches* ★ $

FT ***Fly Trap*** *Beloved classic SF grill in a beautiful room. Good food and service 243-0580* ★★ $$

HL ***Hawthorne Lane*** *One of SF's best. Clinton dined here. California-Asian cuisine 777-9779* ★★★★ $$$$

K ***Kuleto's*** *Warm and lively, Italian fare 397-7720* ★★ $$

LC ***Le Charm*** *Intimate French bistro. Crowded for a good reason 546-6128* ★★★ $$

LU ***Lulu*** *Calif cuisine, seafood and roast chicken. Lively scene, noisy and fun 495-5775* ★★★ $$$

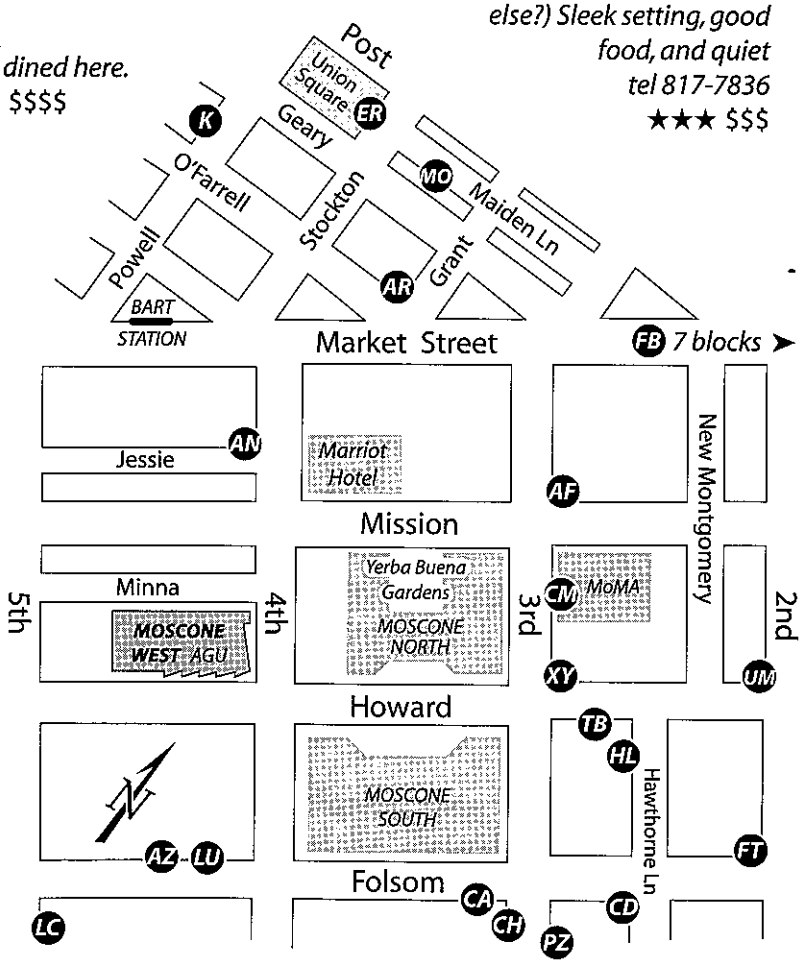
MO ***Mocca*** *Crowded, boisterous Italian restaurant/deli with fabulous sandwiches and outdoor dining. Worth the walk* ★★★ $

PZ ***Pazzia*** *Good Florentine food, great and friendly service* ★★★ $$

TB ***Thirsty Bear*** *Raucous tapas brewpub—only in SF* ★ $

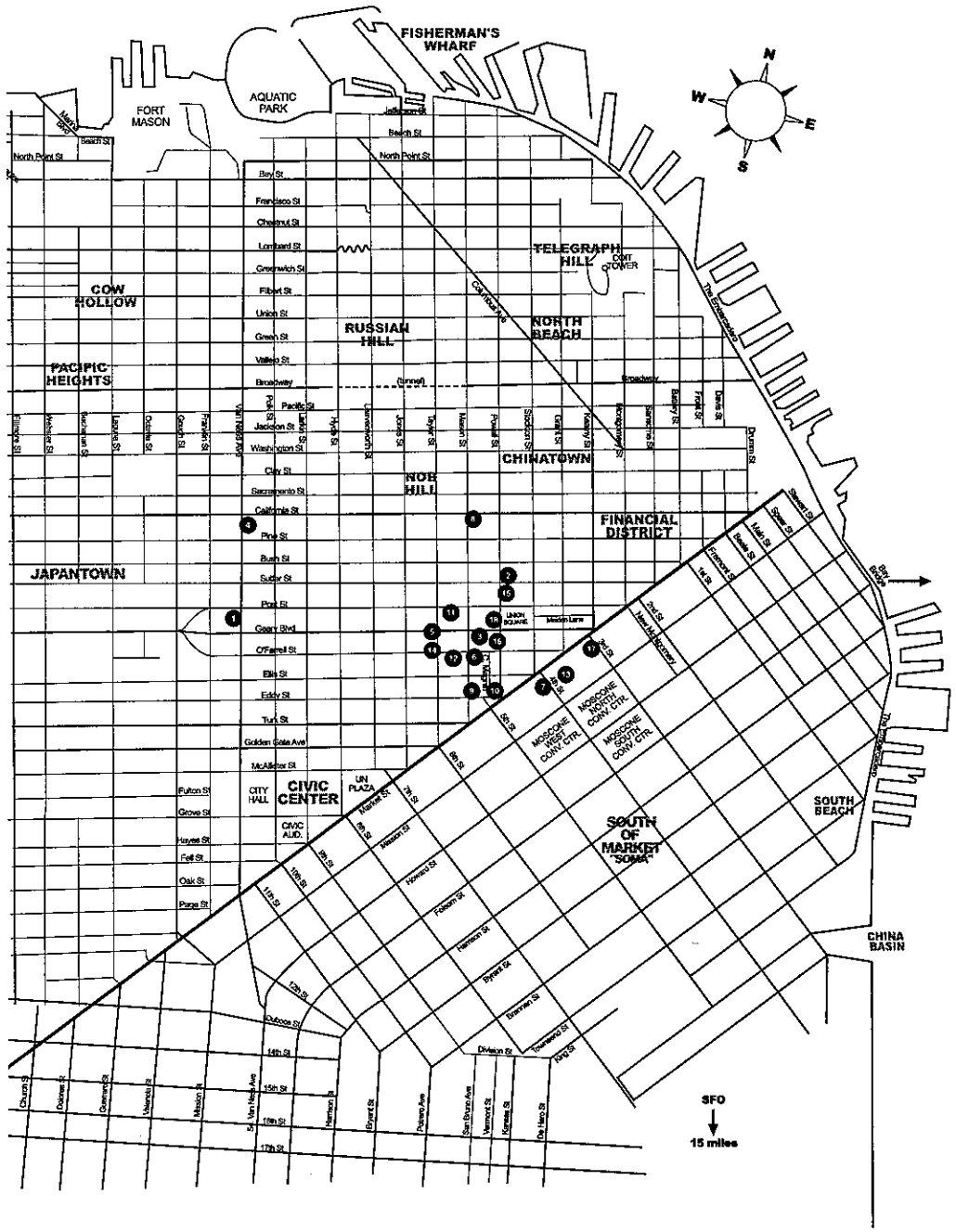
UM ***Umbria*** *Wonderful northern Italian food in a lovely salon 546-6985* ★★★ $$

XY ***XYZ*** *In the W Hotel (where else?) Sleek setting, good food, and quiet tel 817-7836* ★★★ $$$



FB ***Ferry Building*** *Magnificently restored pre-earthquake building with great architecture, views, deli's, take-out places, wine bars, and the famous 'Slanted Door' (861-8032,* ★★★★ $$$ *) and Market Bar (434 1100,* ★★ $$$*) restaurants. Everything except the two restaurants closes at 6 PM. Don't miss the chance to see this beauty at the foot of Market.*

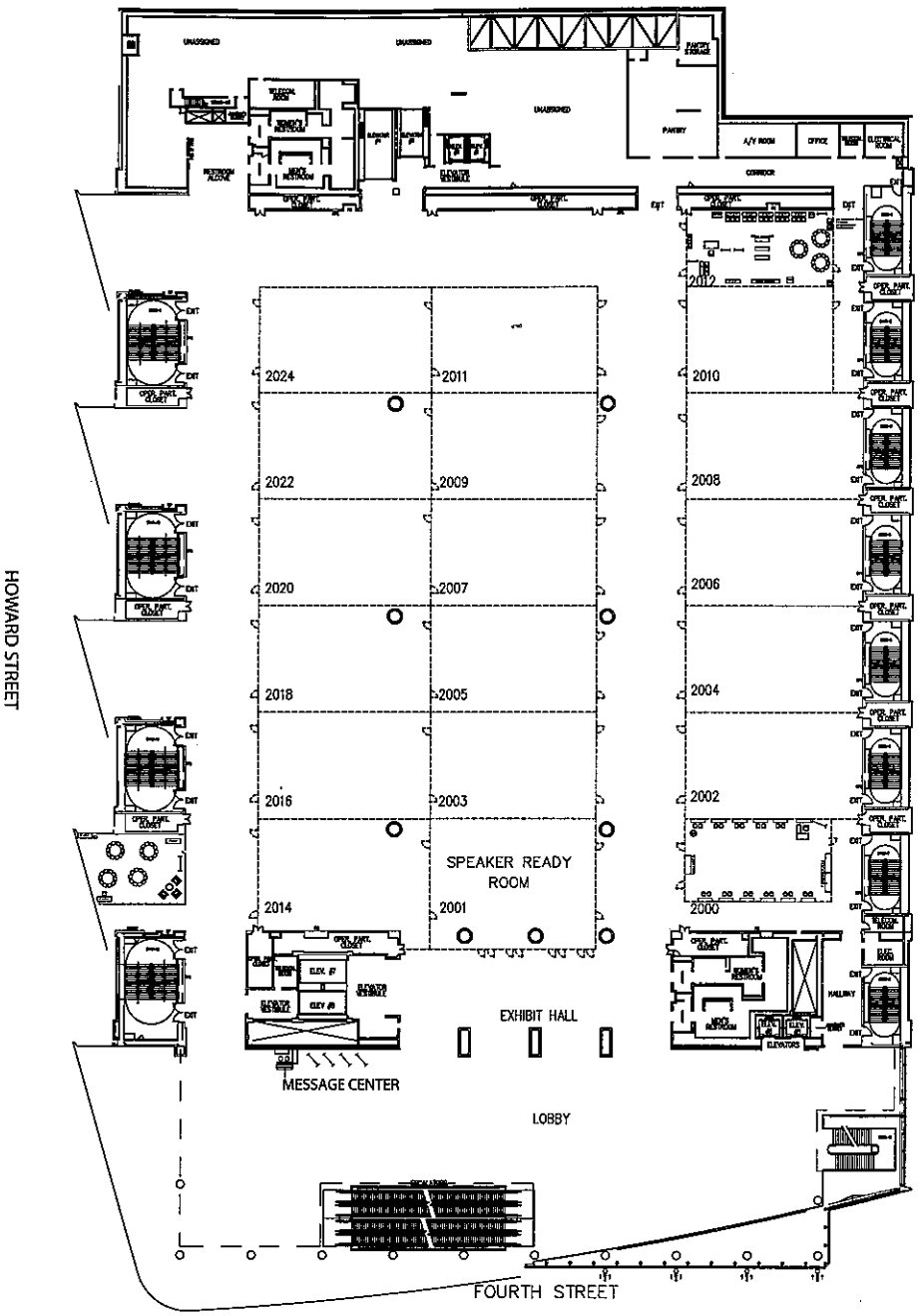
Map of Hotels



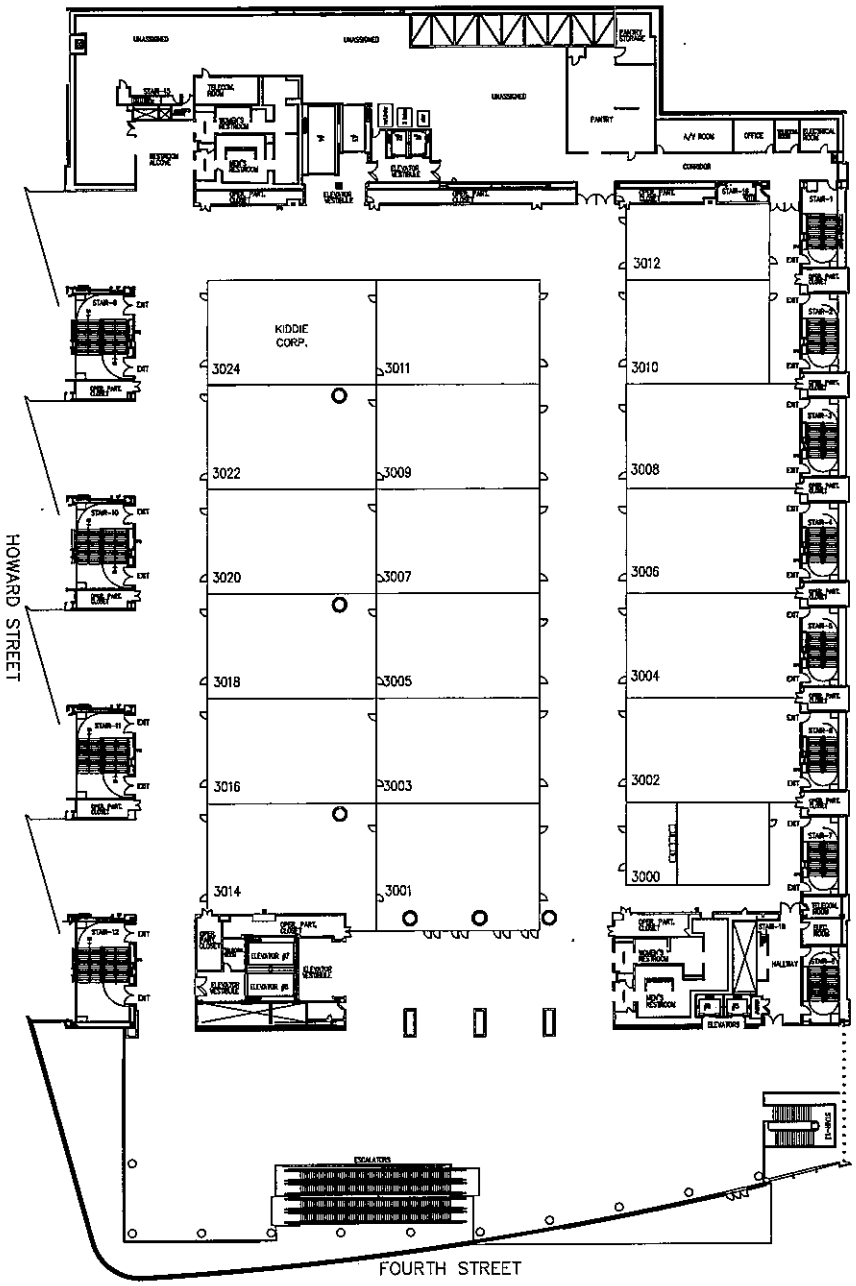
Hotels

1. **Cathedral Hill Hotel**
   1101 Van Ness Avenue (near Geary)
   Phone: +1.415.776.8200
2. **Crowne Plaza Union Square**
   480 Sutter Street
   Phone: +1.415.398.8900
3. **Handlery Union Square Hotel**
   351 Geary Street
   Phone: +1.415.781.7800
4. **Holiday Inn Golden Gateway**
   1500 Van Ness Avenue
   Phone: +1.415.441.4000
5. **Hotel Monaco**
   501 Geary Street
   Phone: +1.415.292.0100
6. **Hotel Nikko San Francisco**
   222 Mason Street
   Phone: +1.415.394.1111
7. **Hotel Palomar**
   12 Fourth Street
   Phone: +1.415.348.1111
8. **InterContinental Mark Hopkins**
   One Nob Hill
   Phone: +1.888.259.8696
9. **Parc Fifty Five Hotel**
   55 Cyril Magnin
   Phone: +1.415.392.8000
10. **Powell Hotel**
    28 Cyril Magnin Street
    Phone: +1.415.398.3200
11. **Prescott Hotel**
    545 Post Street
    Phone: +1.415.563.0303
12. **San Francisco Hilton**
    333 O'Farrell Street
    Phone: +1.415.771.1400
13. **San Francisco Marriott**
    55 Fourth Street
    Phone: +1.415.896.1600
14. **Serrano Hotel**
    405 Taylor Street
    Phone: +1.415.885.2500
15. **Sir Francis Drake**
    450 Powell Street
    Phone: +1.415.392.7755
16. **Villa Florence Hotel**
    225 Powell Street
    Phone: +1.415.397.7700
17. **Westin San Francisco Market Street**
    50 Third Street
    Phone: +1.415.974.6400
18. **Westin St. Francis**
    335 Powell Street
    Phone: +1.415.397.7000

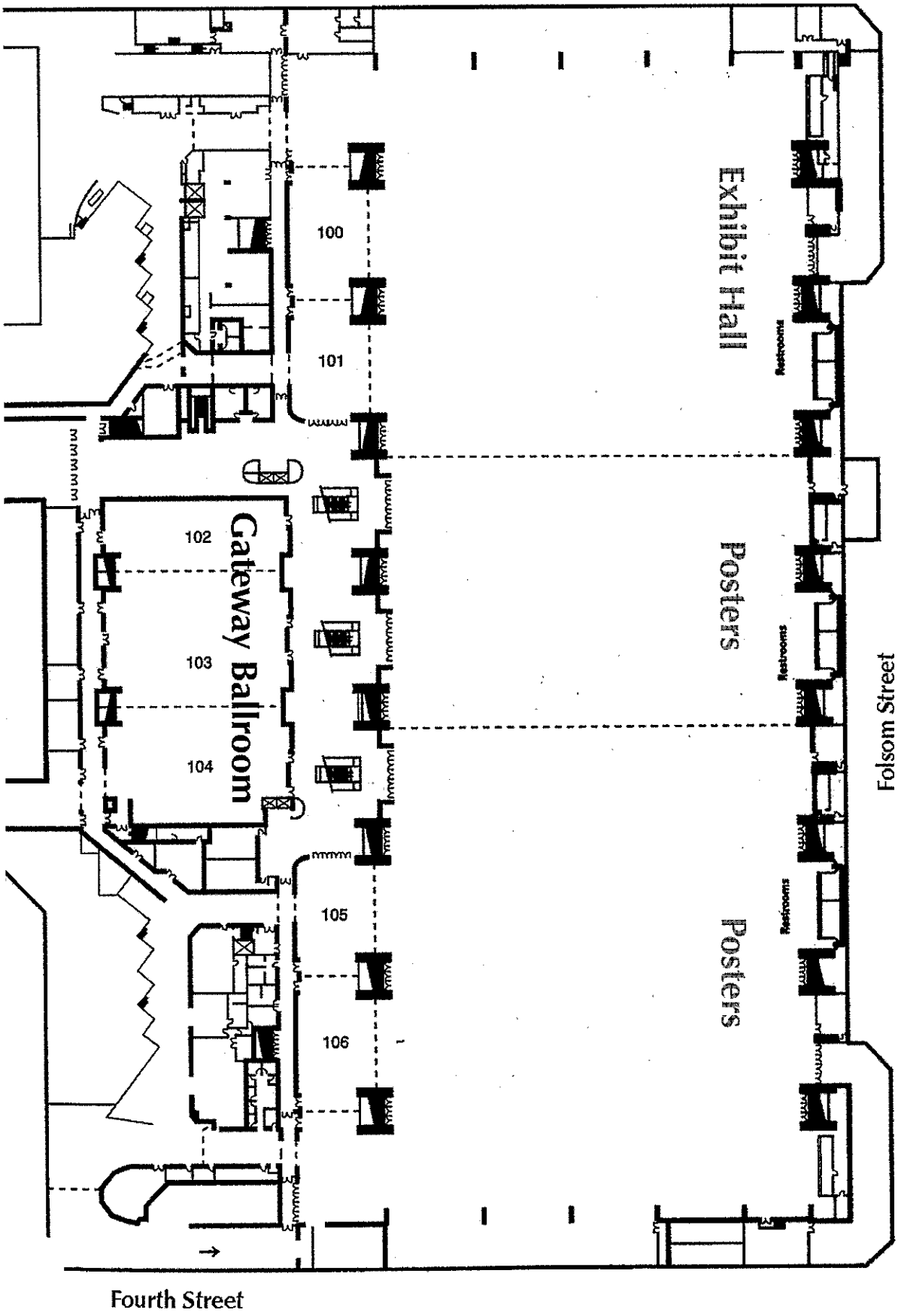
Moscone West Level 2



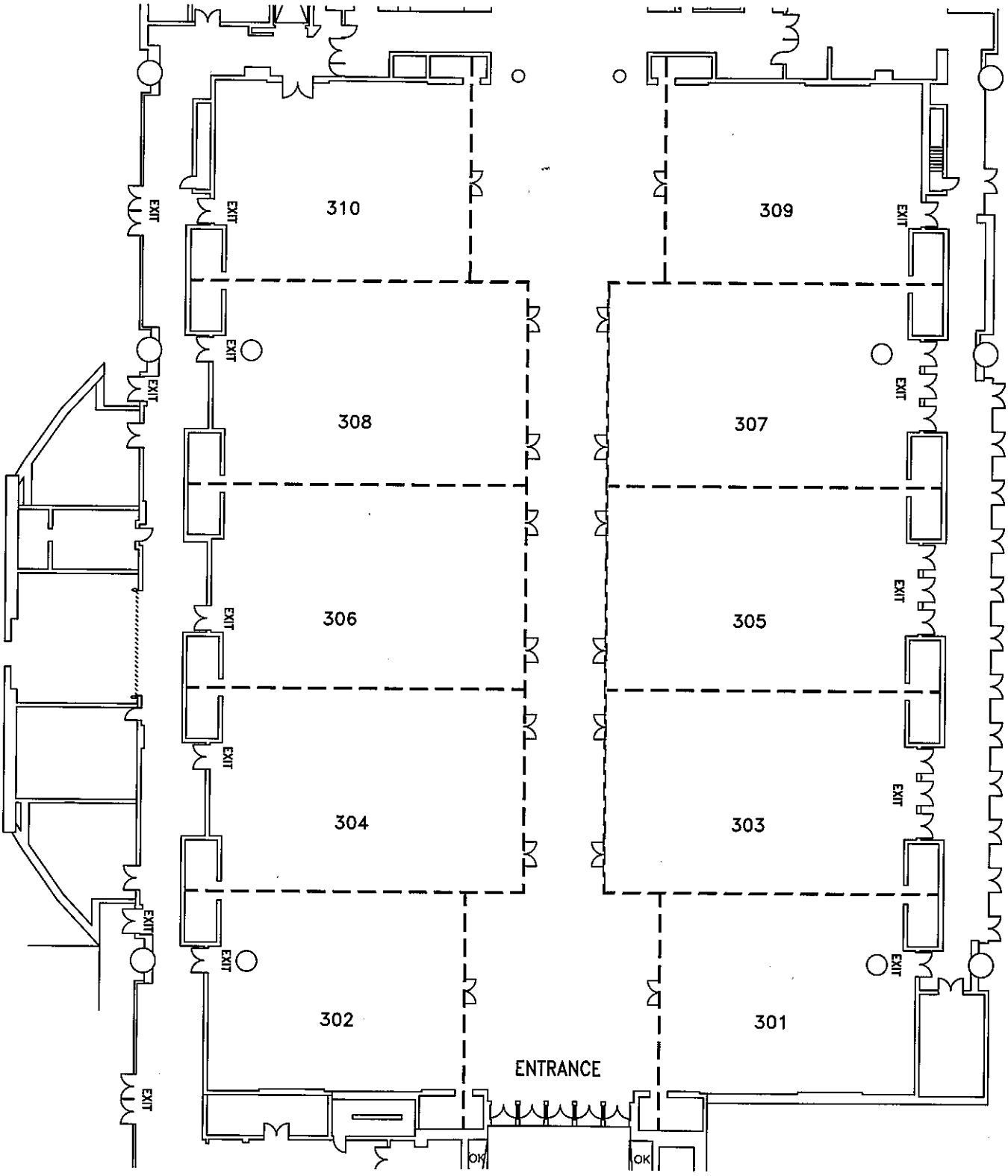
Moscone West Level 3



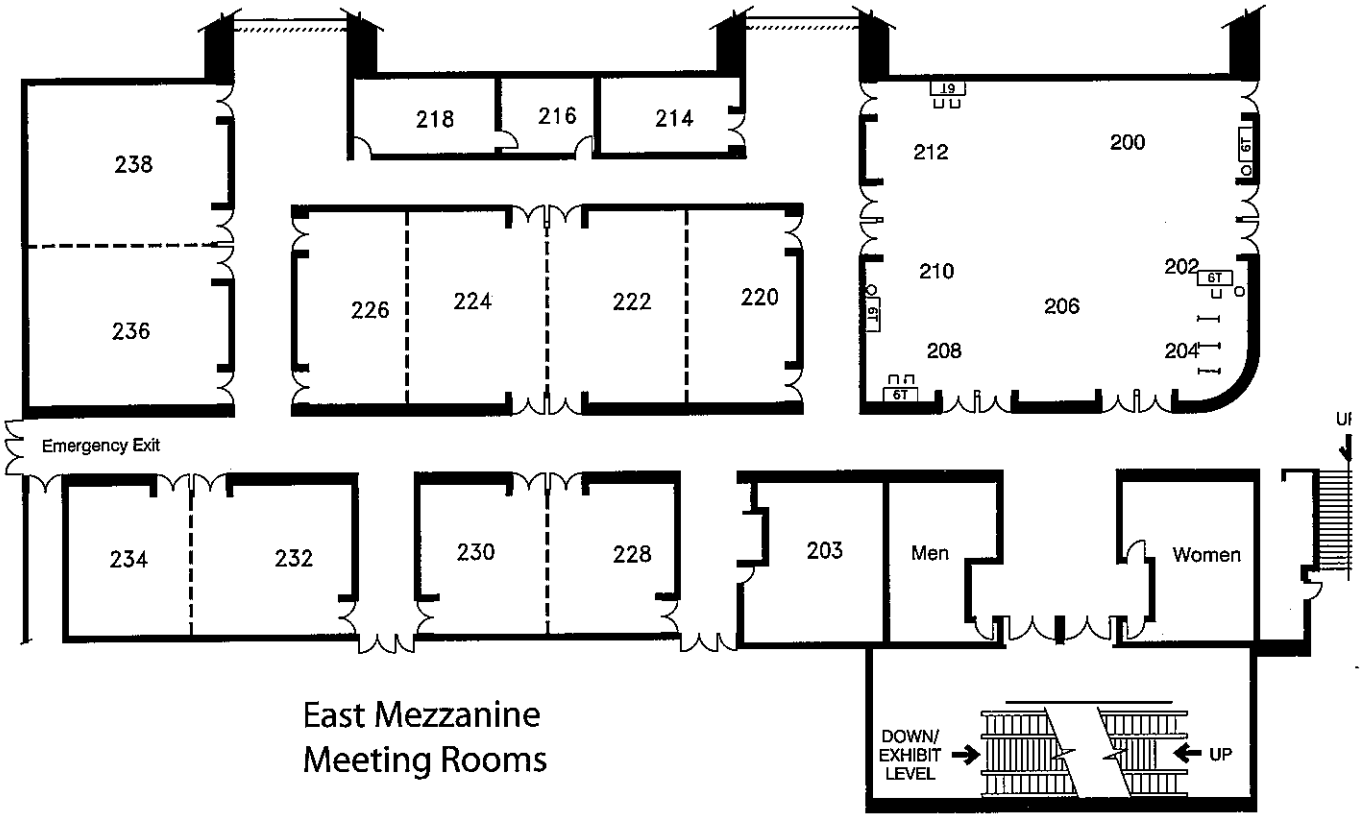
Moscone South Gateway Ballroom (Rooms 102–104)



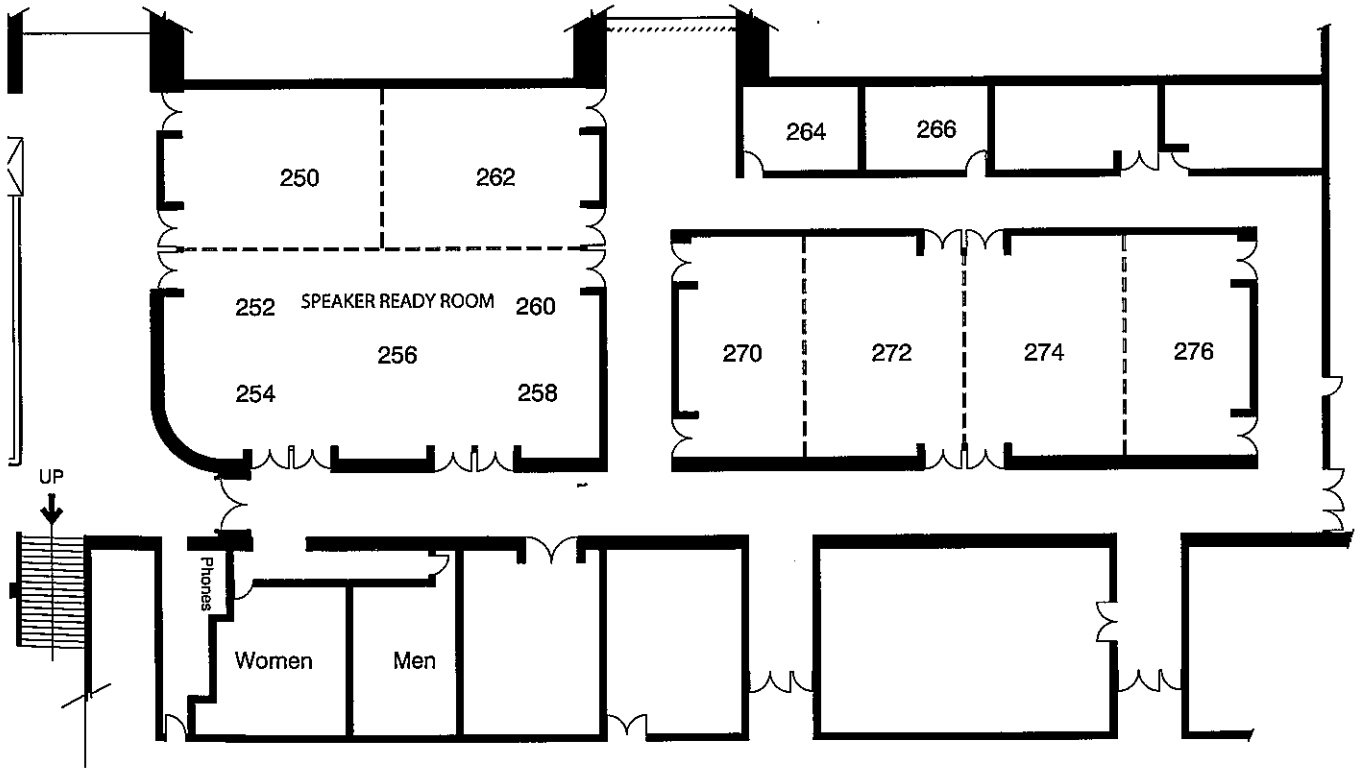
Moscone South Esplanade Ballroom (Rooms 301–310)



Moscone South East and West Mezzanine (Rooms 202–276)

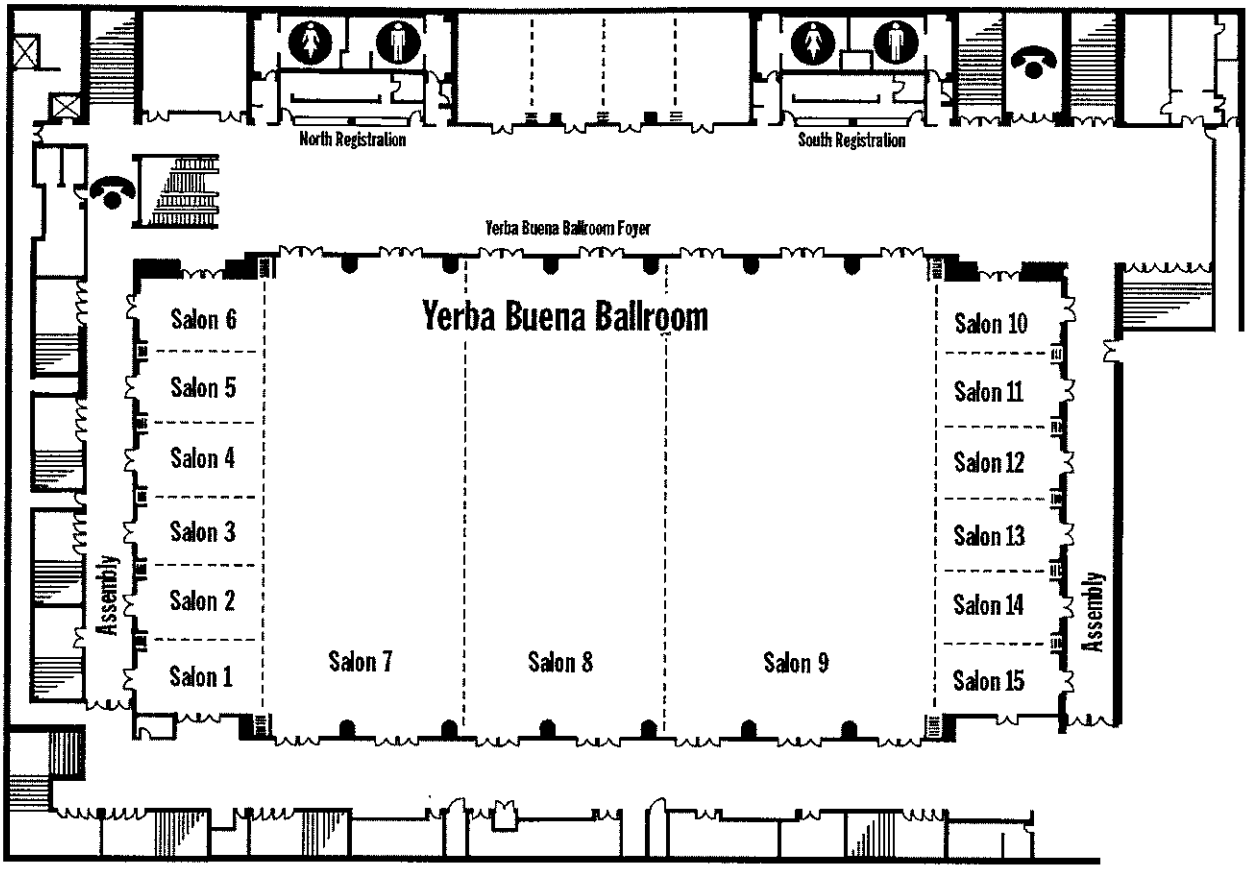


East Mezzanine
Meeting Rooms

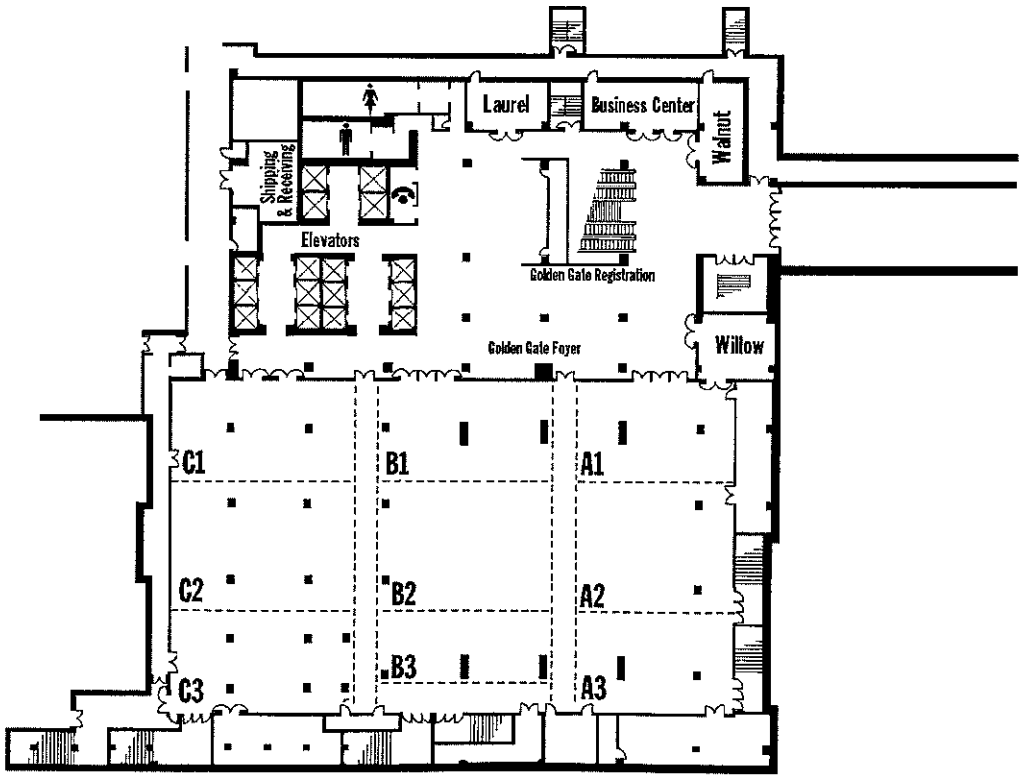


West Mezzanine
Meeting Rooms

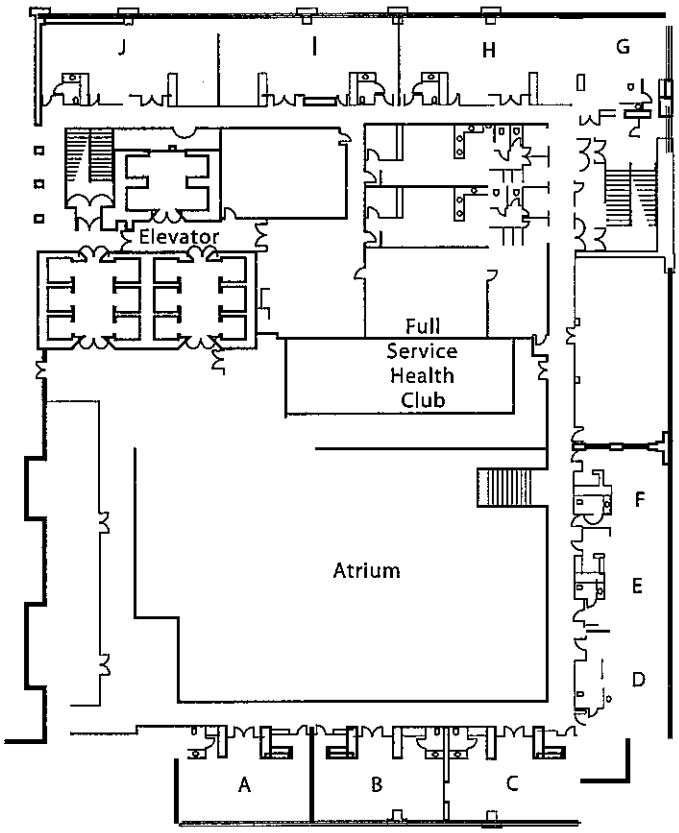
Marriott Yerba Buena Salons (Lower B2 Level)



Marriott Golden Gate Hall (B2 Level)



Marriott Pacific Conference Suites (Fourth Floor)



AGU Outreach Programs at 2007 Fall Meeting
Connecting Science and Society

AGU Outreach Programs at 2007 Fall Meeting: Connecting Science and Society

Public Lecture: How do Scientists Know Global Warming is Real and Serious?
Presented by Richard Somerville

Richard C. J. Somerville, of the Scripps Institution of Oceanography and the IPCC, will cite evidence from the recent Nobel Prize winning IPCC report—and from new observations—to show "that we're already seeing exactly the changes we've been predicting: Arctic sea ice thinning, glaciers in retreat worldwide, the atmosphere becoming more humid. We're talking not about the uncertainties..."

Congressional Science Fellow Program – Thirtieth Anniversary Luncheon
Wednesday, 1230h-1330h, Moscone South 274-276

Come celebrate more than 30 years of service to Congress by AGU Congressional Science Fellows! A panel of four former Fellows will discuss their experiences on The Hill and how serving Congress influenced their lives and careers. Lunch will be served on a first- come, first-served basis.

Communicating With Congress Workshop
Thursday, 1230h-1400h, Moscone South 236

Learn how to get involved at a local and national level, and how to speak to elected representatives about science! This hands-on workshop will provide you with tips and techniques for speaking effectively about science to policy makers. Lunch will be served, but space is limited. No advance registration required.

Geophysical Information for Teachers (GIFT) Workshop: "Climate Change Science and Classroom Tool Kit"
Wednesday and Thursday, 0830h-1530h, Moscone South 270-272

This year's GIFT workshop will present scientists discussing the latest results in climate change science and policy. The workshop will give participating teachers a suite of engaging tools and activities to use in their classrooms.

Of Particular Interest to Students

Career Center
Monday through Friday, 0830h-1800h, Moscone Center South, Level 1

Visit the Career Center for a great new employee or an exciting job opportunity!

Education/Student Lounge
Monday through Friday, 0830h-1700h, Adjacent to the Career Center

Daily brown bag lunch talks on specific topics related to Earth and space science education and careers. Check the sign outside the lounge for a daily schedule.

Academic Showcase
Monday through Friday, 0830h-1700h, Moscone Center South, Level 1

Over 30 academic departments searching for graduate students or postdoctoral candidates and advertising their institutions and programs will be participating in this year's Showcase. The Showcase offers a valuable opportunity for students to explore their graduate school and academic employment options.

AGU Student Breakfast
Monday, 0630h-0745h, Marriott Hotel, Yerba Buena Salon 7

All students registered for meeting are welcome at a complimentary breakfast. AGU leadership and staff will give overviews of the Fall Meeting and AGU programs designed for students. It's a splendid opportunity to meet fellow students and future colleagues. This program has been made possible by generous support from Chevron, ExxonMobil, and Swiss Re.

Careers Luncheon
Tuesday, 1230h-1330h, Moscone South 270-276

Enjoy a complimentary lunch and discuss career possibilities with scientists and employers in academia and outside. As seating is limited, the first 200 students to collect tickets from the Career Center beforehand will be admitted to the lunch. This program has been made possible by generous support from Chevron, ExxonMobil, and Swiss Re.

VISIT THE AGU BOOTH!

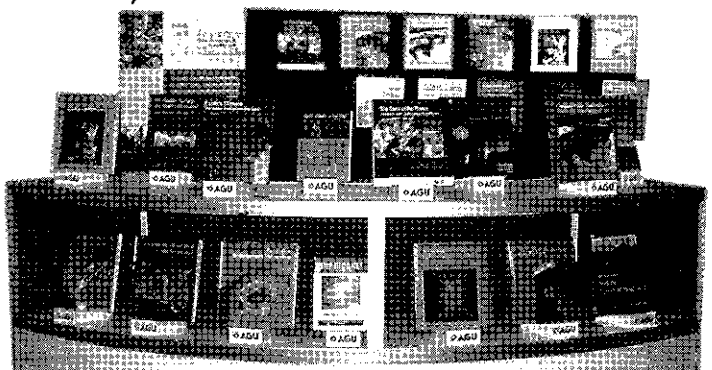
Spend over $90 at the AGU booth and receive a free gift!

What can you do at the AGU booth?

- ► Join AGU or renew your membership
- ► Purchase books (over 100 titles on display)
- ► Purchase or renew journal subscriptions
- ► Discounted books on the book sale table
- ► Preview AGU journals online
- ► Purchase the 2007 Fall Meeting T-shirt
- ► Obtain information about institutional journal subscriptions
- ► Visit the Publications Resources Center
- ► Learn how you can publish with AGU
- ► Find out about upcoming meetings
- ► Speak with Member Service staff face to face
- ► Contribute to Union funds

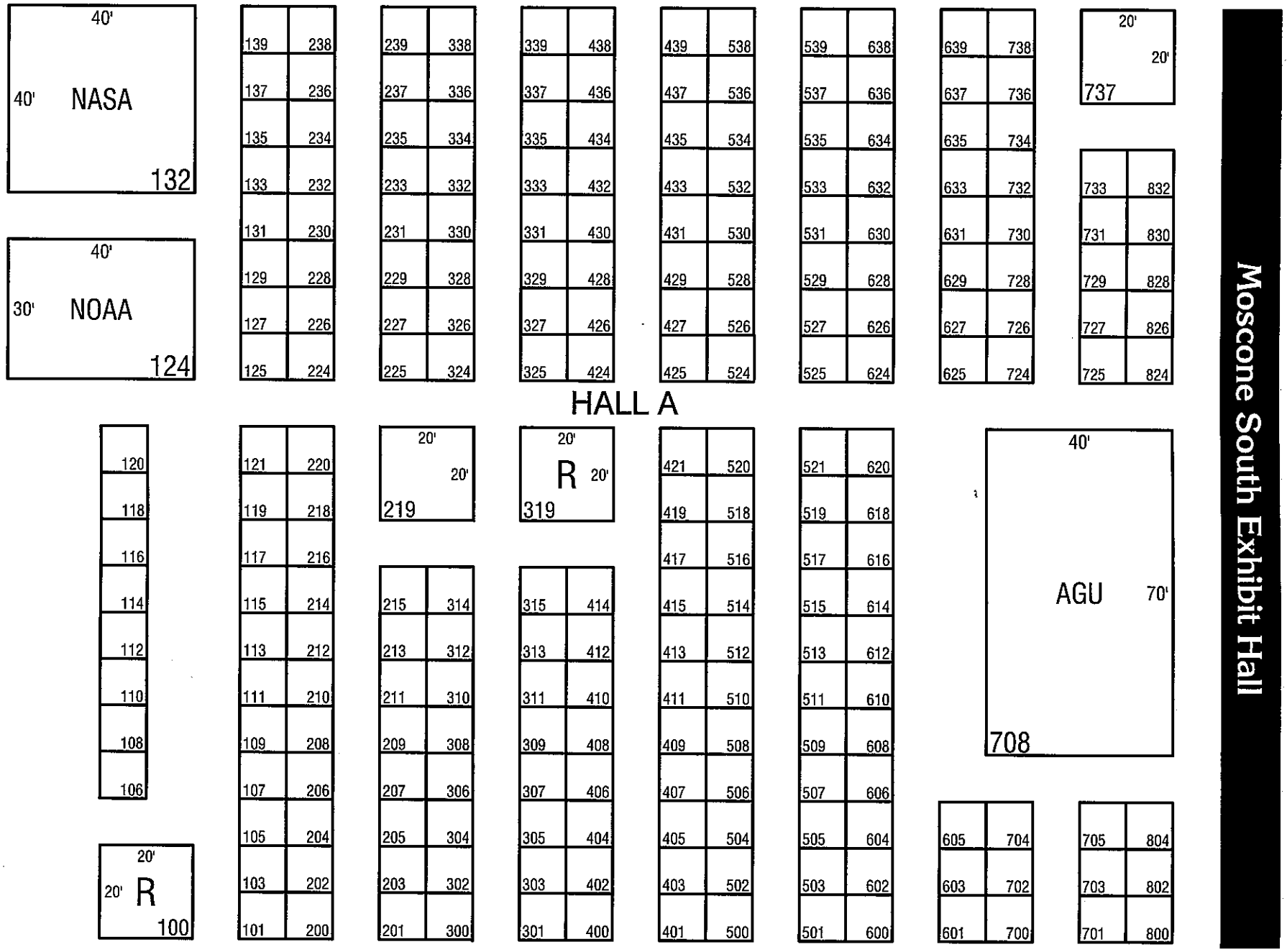
.... and more!

►► Students: Receive a 50% discount on the list price of most books at the AGU booth. (While supplies last; does not apply to shipped orders)



Hours of operation:
Monday through Thursday, 0930h - 1800h
Friday, 0930h - 1630h

AGU


Moscone South Exhibit Hall
40'
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132
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124
HALL A
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737
AGU
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708
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219

Fall Meeting Exhibitor Profiles

2G Enterprises
Booth 603
Attn: Robert Goodman
1245 Space Park Way
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Phone: +1 650.965.0500
Fax: +1 650.965.0404
E-mail: bob@appliedphysics.com

2G Enterprises manufactures high performance rock magnetometer systems and accessories. Our newest rock magnetometer design uses a 4.2 degree Kelvin pulse tube cryocooler to produce liquid helium temperatures and eliminate the liquid helium reservoir. This avoids the need for liquid helium refills while still maintaining magnetic moment sensitivity of 3 x 10-9 emu. 2G Enterprises also manufactures high field (3000 Gauss) Degaussing systems, rock sample handlers, pulse magnetizers and single and three axis fluxgate magnetometers with noise levels of 10-6 Gauss.

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E-mail: kwestrick@3tiergroup.com

Founded in 1999, Seattle-based 3Tier is the largest independent provider of wind, solar and hydro energy assessment and power forecasting worldwide. People around the world turn to 3Tier when they want the best scientific information to make decisions about their renewable energy projects from the prospecting stage to operations. For more information, visit 3tiergroup.com.

33 International Geological Congress (33 IGC)
Booth 632
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Thomas Haftyes gt 2
P.O. Box 2694 Solli
No. 0204 Oslo
Norway
Phone: +011 47 4004 0210
Fax: 011 47 2256 0541
E-mail: asgeir@congrex.no

AAAS/Science
Booth 519
Attn: Carroll Griffin
P.O. Box 250355
Atlanta, GA 30325, USA
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Fax: +1 404.249.6414
E-mail: cgriffin@gtpmgt.com

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Aanderaa Data Instruments
Booths 636, 638
Attn: Richard Butler
182 East Street
Suite B
Attleboro, MA 02703-4209, USA
Phone: +1 508.226.9300
Fax: +1 508.226.9306
E-mail: richard.butler@aadi.no

Aanderaa Data Instruments (AADI) will exhibit its new SEAGUARD ® RCM and RDCP 600. AADI with 40 years of service to science, research, and industry announces a breakthrough in commercial Distributed Remote Underwater Observation Systems. Our Seaguard Host with its expanding line of Smart Sensors marks a turning point in instrumentation for underwater and atmospheric measurement. Individual sensors become nodes in observing arrays and self-contained instruments. Known for reliable, robust quality oceanographic instrumentation AADI is a trusted source of institutes, universities, surveyors, navies, oil and gas, drilling, mining, port authorities, environmental agencies, water authorities, and electric utilities internationally.

Academia Book Exhibits
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3512 Willow Green Court
Oakton, VA 22124, USA
Phone: +1 703.716.5537
Fax: +1 703.620.3676
E-mail: acadbkexbs@aol.com
Multipublisher display of academic books and journals.

Advanced Ceramics Research, Inc.
Booth 131
Attn: Halina Pender
3292 East Hemisphere Loop
Tucson, AZ 85706, USA
Phone: +1 520.434.6342
Fax: +1 520.573.2057
E-mail: hpender@acrtucson.com

Advanced Ceramics Research, Inc., founded in 1989, designs and manufacturers the Silver Fox and other lightweight, inexpensive and expendable Unmanned Aerial Systems. ACR also develops state-of-the-art, high-temperature/strength ceramic materials/processes. Technologies and services include: water-soluble polymer composite tooling materials, gel casting slurries, fibrous monolith composite ceramics and ceramic composites. www.acrtucson.com

Airborne Science and Technology Laboratory
Booth 329
Attn: Bruce Coffland
NASA Ames Research Center
Building 240, Room 219
Moffett Field, CA 94035, USA
Phone: +1 650.604.2864
Fax: +1 650.604.4987
E-mail: bcoffland@mail.arc.nasa.gov

The ASTL develops and operates prototype airborne remote sensing instrumentation for the NASA Earth Science Division and the Earth Observing System program. It maintains a small suite of facility sensors, including the MODIS and ASTER Airborne Simulators, and a calibration lab, for use by the NASA research community. The engineering group also supports other instrument teams with integrations onto the NASA airborne science platforms. The lab is staffed by the University of California, Santa Cruz.

Alaska Satellite Facility
Booth 703
Attn: Vicky Wolf
P.O. Box 757320
Fairbanks, AK 99775-7320, USA
Phone: +1 907.474.6166
Fax: +1 907.474.2665
E-mail: vwolf@asf.alaska.edu

American Geological Institute
Booth 239
Attn: Andrea Martin
4220 King Street
Alexandria, VA 22302, USA
Phone: +1 703.379.2480
Fax: +1 703.379.7563
E-mail: asm@agiweb.org

AGI, a nonprofit federation of 44 scientific and professional associations, provides geoscience information services, serves as a voice of shared interests, plays a major role in strengthening geoscience education, and strives to increase awareness of the role the geosciences play in society's use of resources and interaction with the environment.

American Geophysical Union (AGU)
Booth 708
Attn: Member Services
2000 Florida Avenue, NW
Washington, DC 20009, USA
Phone: +1 202.462.6900
Fax: +1 202.328.0566
E-mail: Service@agu.org

The American Geophysical Union (AGU) is an international scientific society of over 50,000 researchers and students in 140 countries; membership also extends to academic and research institutions and corporations. AGU contributes to the understanding of Earth, other planets, and their space environments. AGU advances the Earth and space sciences by catalyzing and supporting the efforts of individual scientists within and outside the membership. The Union organizes and disseminates information for the scientific community through books and journals and through large and small scientific meetings. As a learned society AGU meets its obligation to serve the public good by fostering quality in Earth, atmospheric, oceanic, hydrologic, space, and planetary sciences and bringing the results of such research to the public. The Earth and space sciences transcend national boundaries, as does AGU. Individual scientists worldwide are equals in all AGU activities.

Apogee Instruments
Booths 518, 727
Attn: Garrett Wheeler
721 West 1800 North
Logan, UT 84321, USA
Phone: +1 435.792.4700
Fax: +1 435.787.8268 fax
E-mail: wheeler@apogee-inst.com

Apogee Instruments is dedicated to the development of innovative environmental sensors. Available products include quantum meters and sensors, pyranometers, net radiometers, UV sensors, infrared radiometers, portable spectroradiometers, and oxygen sensors. Apogee's goal is to help customers make better measurements by developing accurate and precise instruments and providing superior customer support.

ASC Scientific
Booth 725
Attn: John Toth
2075 Corte Del Nogal
Suite T
Carlsbad, CA 92011, USA
Phone: +1 760.431.2655
Fax: +1 760.431.0904
E-mail: jtoth@ascscientific.com

Manufacturer and supplier of research tools for the earth sciences, specializing in paleomagnetic instruments, GPS, and field geology equipment. Paleomagnetic instruments include spinner magnetometers, demagnetizers and susceptibility instruments from AGICO, Bartington, Molspin and ASC. GPS products include Trimble GIS data capture systems and laser rangefinders from LTI and Laser Atlanta.

Association for Women Geoscientists
Booth 114
Attn: Phyllis Porter
P.O. Box 1005
Menlo Park, CA 94026, USA
Phone: +1 831.471.9351
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The DOE Office of Science (BER) Global Change Education Program sponsors Summer Undergraduate Research Experience (SURE) and Graduate Research Environmental Fellow (GREF) programs. Complete details on GCEP can be found at http://www.atmos.anl.gov/GCEP/ . SURE and GREF students are selected by competitive application. U.S. citizenship is required. Applications are now being accepted for 2008 with cut off date of Feb. 4, 2008. Information at the Exhibit Table. Contact: Dr. Jeff Gaffney - Chief Scientist (GCEP) jsgaffney@ualr.edu <mailto:jsgaffney@ualr.edu> - 501-569-8840

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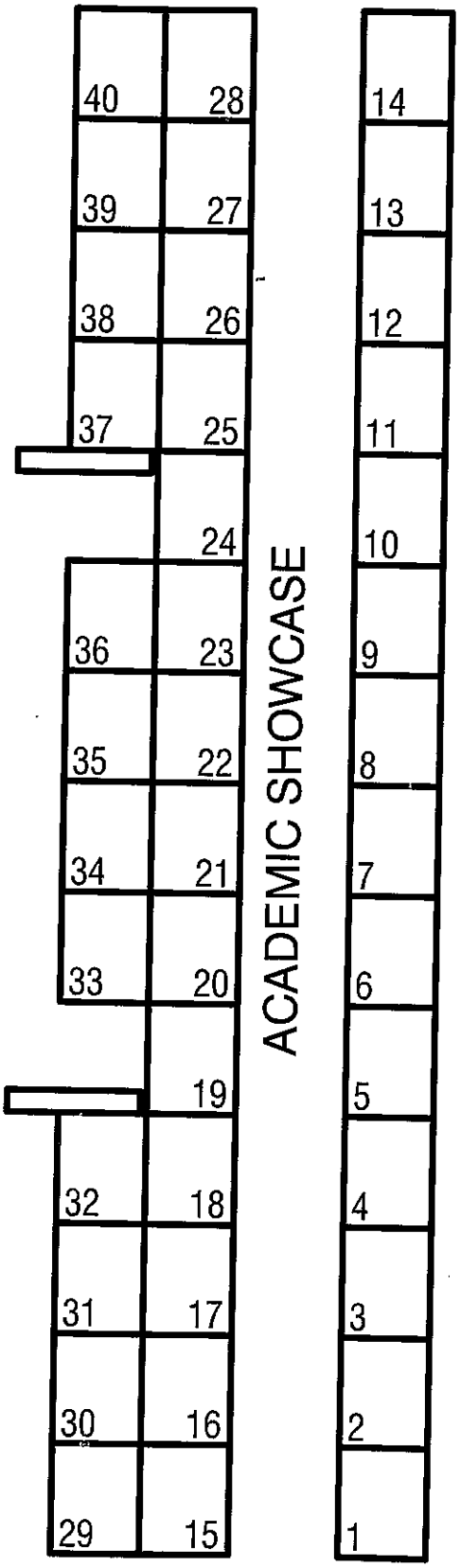

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Meeting Highlights

Union

This year marks the 47th AGU Fall Meeting, and the 40th anniversary of Fall Meeting in San Francisco. The first Fall Meeting was held in Los Angeles, 27–29 December 1961 (read the abstracts, in *Journal of Geophysical Research, 67*(4), 1627–1664). Since then the meeting has grown, to over 14,000 papers to be presented this year.

U35A: Frontiers of Geophysics Lecture. This year, we are honored to have Lonnie Thompson from Ohio State University discuss recent climate change. Thompson is a glaciologist who has worked extensively collecting and analyzing ice cores to define the recent climate history of the Earth. The Frontiers of Geophysics Lecture is one of the major scientific presentations of the meeting. Various aspects of climate change, from observation studies to theoretical modeling, are the focus of both Union and section sessions.

U21F, U22B, U13B: Quaternary Climate Records From the Continents: Comparisons With Their Marine and Polar Cousins. Coring of marine and lacustrine sedimentary sections is providing detailed records of the recent climate history of the Earth. Comparison of these records shows that the timing and amplitude of climate changes vary with location and between the oceanic and continental environments. Questions to be addressed include the extent to which the tropical hydrological cycle is influenced by high-latitude ice sheets or the orbital influence on seasonal insolation, the direction, amplitude, and global extent of centennial- to millennial-scale climate variability, and how continental records compare with marine records.

U12A, U13C, U14A, U21B: Chemical Geodynamics: The Road Ahead. This is the 25th anniversary of the term "chemical geodynamics," and as such a review of the progress and remaining questions is timely. The session focuses on the secrets of the evolution, composition, dynamics, and linkages between the surface and the deep interior of the Earth. Mafic crust is formed at spreading ridges, chemically interacts with the ocean, and is veneered with continent-derived sediment during plate aging. Subduction subjects the sediment/ocean crust/mantle lithosphere package to a bewildering array of chemical and physical processes at a wide range of pressures and temperatures.

U43D, U41A: The Intergovernmental Panel on Climate Change 2007. This session focuses on the three IPCC Working Group Reports released this year and will discuss the results and implications of those reports. The IPCC is a co-recipient of the 2007 Nobel Peace Prize.

U41D: Cooler Living in a Warming World: Solutions to the Carbon Problem. This session brings together scientists, engineers, and policy advisors to discuss options for mitigating climate change through reduced atmospheric input of CO2. Talks will address current U.S. policy initiatives, the economics of mitigation techniques, low-carbon technologies, and strategies for capture and sequestration of carbon.

U53A, U54A, U51A: The 2007 Sumatra Seismic Sequence. This late-breaking session was added as a result of the September 2007 magnitude 7.8 and 8.4 earthquakes along the boundary between the Australian and Sunda plates: the Sunda (Java) Trench. These seismic events follow the great magnitude 9.1 event in 2004 and subsequent large events in 2005. The session focuses not only on the geophysical aspects of the plate boundary and rupture but also on disaster preparation and response.

Atmospheric Sciences

Bjerknes Lecture

Since its discovery in 1985, the ozone hole has captured the attention of scientists, policy-makers, and the public, and ozone depletion has become one of the landmark scientific issues of the twentieth century. Susan Solomon, in "A Review of Stratospheric Ozone Depletion, and Some Linkages and Parallels to Climate Change," will discuss the background and historical evolution of understanding ozone depletion, with a view to explaining the evidence for ozone loss, its attribution to human use of chlorofluorocarbons, and the steps taken in global policy decisions. Recent studies that have highlighted new issues centering upon how changes in ozone affect the climate not only in the stratosphere but also in the troposphere will then be described. Solomon will conclude by discussing some parallels and contrasts between the two very different global environmental issues of ozone depletion and global warming.

Climate Change and Variability

The Fall Meeting venue was a natural gathering place for exchanging information about climate variability and change in the early 1970s. The foundation for a broad, independent research community to create and participate in nascent national and world climate programs began in San Francisco, and expanded to venues the world over. It was the multidisciplinary nature of AGU that was important then, just as it is now. This year's Fall Meeting focuses on regional to global dynamics (A51F, A52B, A53E, A43B), linking micrometeorology to climate (A41E, A53A), space-based global monitoring, including measuring carbon dioxide (A54D, A31B, A11F, A12B, A13D), reviving the simple but global climate model (A22B, A31A), and chemistry and climate (A53F, A54B, A51D).

Platforms, Instruments, and Measurements

Whether for atmospheric composition or dynamics, or for the factors that influence them, recent developments in measuring and observing technology open new windows to scientific understanding. Advances in technology and analytical methods will be discussed in sessions on frontiers in instrumentation (A51H, A52C, A53G, A33B, A43D), comparisons of data from a variety of measurement techniques (A11E, A12A, A14A, A21B, A23A), and evaluation of cloud parameterizations with satellite data (A42C, A53D).

Weather Systems

Are storms and hurricanes more or less likely to occur in a global warming scenario? Will winds be stronger and precipitation be heavier? What is new about modeling these storms to improve predictions? These and other questions about major weather systems will be addressed in sessions on modeling hurricanes (A11G, A12D, A21C) and extratropical and polar storms (A24A, A13E).

Chemistry and Composition of the Atmosphere

The chemistry and dynamics of the upper troposphere and lower stratosphere are explored in general (A31D, A33H, A21E), with an emphasis on the valuable ozonesonde data from the SHADOZ network (A21D, A32C), and with an emphasis on the tropics (A34B, A21A), all important topics in addressing larger issues such as solar influences on climate, Earth's ozone shield, potential for geoengineering of climate, and weather and climate prediction. The composition of the atmosphere is explored in sessions that focus on the key species hydroxyl radical, which is the primary oxidant in the troposphere (A52A, A43A); on halogens (A41G, A42B, A51C), which are important reactants in polar regions and in the lower stratosphere; on tropospheric ozone, its precursors, and greenhouse gases from a regional and global perspective (A11C, A13H, A14C); and on the role of ice and snow in affecting atmospheric composition (A43F, A53B), including compositional changes in the air within snowpack (A44B).

An important highlight at this year's meeting is a set of special sessions discussing the impact of large urban complexes (megacities) on air quality and climate from local to global scales. The implications on policy will be presented and discussed in an overview session (A11D). Other sessions will focus on assessing emissions inventories and air quality models (A12C, A13I, A14D, A23C), chemistry in polluted atmospheres (A21G, A22C, A24C, A31E, A33D), impacts of coastal and complex terrain on air quality (A51G, A51B), urban effects on radiative forcing by aerosols and clouds, transport of air pollution to regional and global scales (A41F, A42A, A43G, A44C, A51E, A33A, A53C), and satellite observations (A33C, A52D, A53H, A54C). In addition to these sessions, the influence of nitrogen oxide (NOx) emissions on tropospheric chemistry (A21A , A34B) will be discussed.

Aerosols

Atmospheric aerosols affect air quality and human health, weather, and climate. Continuing as one of the largest uncertainties in future climate scenarios is the effect of aerosols on climate via clouds, precipitation, and radiation. Aerosols directly affect the atmospheric radiation, but because of the complex nature of the aerosol composition it is still unclear how much aerosols reflect or absorb radiation. This topic will be discussed in the session on the radiative forcing of aerosols (A13F, A14B, A11A) with other sessions focusing on radiation transfer (A31C, A32B, A41B) and the energy budget of the atmosphere (A33F, A34D, A41A). The amount of water (A23B, A34C) associated with the aerosol is critical to aerosol radiative properties and their ability to promote cloud formation. Aerosols can increase the reflectivity and the lifetime of clouds, affecting the atmosphere's radiation budget. Aerosols also affect the amount of precipitation occurring from clouds, an important factor in predicting climate and forecasting the weather. However, clouds also affect aerosols (A33G, A23D) by raining out aerosols scavenged into the cloud particles and by promoting growth via aqueous phase chemistry. Key sessions will explore the role of aerosols in cloud processes (A23E, A44A, A13B), the role of aerosols in climate variability and change (A21H, A22D, A24B, A33E, A41D), and the formation of new particles (A13A, A43E). Because there are increasing concerns over long-range, intercontinental atmospheric transport of bacteria, molds, spores, pollen, and the chemical or biological content of particulates and aerosols, the fundamentals of transport mechanisms and processes will be addressed in several sessions (A51A, A54A, A11B, A13G, A41F, A33A, A42A, A43G, A44C, A51E, A53C).

Atmospheric and Space Electricity

The Atmospheric and Space Electricity Focus Group featu six special sessions (AE42A, AE41A, AE43A, AE44A, AE23 AE31A). Sessions AE42A and AE23A report new results observations of blue jets and gigantic jets from Taiwan a over the United States, recent observations by the ISUAL strument on the FORMOSAT 2 satellite, and observations transient luminous events in South America. The highlights this year also include discussion of the most recent advanc in high-speed imaging of streamers in sprites, and modeling their photoionization effects and plasma chemistry. In sessio AE41A and AE23A, in addition to detailed studies of individu flash characteristics, the physics and detection of lightning a cloud electrification are covered from the convective to t global scale. Highlights of this year include new results fro the Oklahoma Lightning Mapping Array, new observations blot-from-the-blue lightning discharges, and discussion of the production mechanisms. This year for the first time the Atm spheric and Space Electricity Focus Group features a dedicat special session (AE43A) on atmospheric electricity, lightnin and the global electric circuit on Earth and other planets the solar system. Nonclassical generators of the global electr circuit, such as the magnetospheric and ionospheric dynam and dust clouds, along with modeling and observations of el ments in the classical thunderstorm generator, are discusse The session highlights also include reports on studies of ele trification processes and lightning on Venus, Mars, and Satur The further experimental characterization of energetic radi tion associated with thunderstorms and lightning discharge including gamma ray flashes of terrestrial origin (TGFs), repr sents a focus of sessions AE44A and AE31A, which also featu the most recent reports on TGF events originating from wint thunderstorms. Several talks provide the most up to date di cussion of possible production mechanisms of TGFs.

Biogeosciences

Biogeosciences sessions address a broad range of topic and spatial scales, from environmental impacts of nanomater als to continental and global-scale observations of vegetatio phenology and carbon fluxes. Major themes include globa change, carbon and water cycling, and biogeochemistry an geomicrobiology.

Global Change

Sessions concerned with global environmental change cove results from multifactor global change experiments, advance in Earth system modeling, interactions among hydrology, veg etation, and climate, and relationships between wildfire an climate.

Carbon and Water Cycling

Sessions on soil carbon stabilization and climate sensitivity, an on observations and modeling of carbon exchange at regiona scales, take place over multiple days. Additional sessions include eddy covariance observations and the use of isotopes to under stand ecosystem atmosphere exchange of carbon and water.

Biogeochemistry and Geomicrobiology

Sessions focused on terrestrial, coastal, and deep-sea biogeochemistry include presentations on molecular characterization of microbial communities, analyses of organic and inorganic forms of metals, and biomineralization processes.

Cryosphere Sciences

This fall, Cryosphere sessions represent a broad range of cold regions science around the general theme of how climate warming is likely to alter snow and ice around the globe. Ian Howat (University of Washington Polar Science Center) is this year's recipient of the Cryosphere Young Investigator Award. The 2007 Nye Lecture will be presented Tuesday afternoon at 4:00 by Mark Serreze (University of Colorado National Snow and Ice Data Center), and his talk is entitled "Arctic Climate Change: Where Reality Exceeds Expectations." At the Cryosphere reception following the Nye Lecture on Tuesday evening, both Serreze and Howat will be recognized. On Monday morning, a large session (C11C, C12A) will present new developments in remote sensing of the cryosphere, and on Monday afternoon climate change effects on Greenland will be discussed (C13A), with posters sessions (C23A, C11A) for both. On Tuesday, the focus will be on issues surrounding sea ice (C21C, C22A, C23B). Wednesday sessions will address issues of cold regions processes and hydrology, with C31A and C32A focusing on frozen soil and subsurface processes and C33A and C34A focusing on snow processes, climate effects, and measurement techniques. Thursday sessions C41C, C42A, and C43A will focus on measurements, dynamics, and modeling of ice sheets, while session C44A will address related issues in Antarctica. On Friday, sessions C53A and C54A will discuss glacier dynamics and hydrology, and C51C and C52A will address periglacial processes.

Education

Education sessions are of interest to attendees who wish to enhance the broader impacts and outreach related to their research, to improve their careers, teaching, and departments, and to learn of innovations in precollege education and teacher professional development. Several sessions focus on advances in climate, environmental change, and polar education and outreach. Results of science-education partnerships and of projects that engage citizen-observers will be revealed. Sessions on new approaches using scientific data sets and technology describe projects that promote inquiry-based learning and student identity as scientists. Cross-cutting sessions address issues in navigating a geoscience career and in building exemplary geoscience departments. High school students present results of their original research in the BRIGHT StaRS session.

Earth and Space Science Informatics

Informatics sessions are focused on the sciences and technologies involved with collecting, manipulating, storing, retrieving, and classifying Earth and space science data. A sample of sessions includes environmental sensor networks and sensor webs that can remotely monitor remote or hazardous environments in a "smart" way and send their data back to base (IN11A, IN22A, IN21A); high-performance parallel computing (IN31C, IN41B, IN43B, IN21B, IN11B) and its application to numerical modeling and simulation of the physical world and universe (IN52A, IN53B); advances in global observing systems, and the formation of diverse and distributed databases; remote sensing technologies and systems of space-based observations (IN21C, IN21A); development of a cyberinfrastructure for the Earth and space sciences to support next-generation scientific research (IN13B, IN53C, IN51B, IN31A, IN51C, IN53A); and exploring, developing, and implementing the conceptual and computational workflows that enable the study of Earth science (IN43C, IN44A, IN41A, IN31A), including visualization technologies (IN13A, IN32A, IN42A, IN33A, IN43A, IN31B). This year we feature two sessions on data sources and management for the International Polar Year (IN54A, IN51A).

Geodesy

Geodesy is the oldest Earth science. The three fundamental fields of geodesy are the geometry and kinematics of the Earth's surface, the Earth's orientation and rotation, and the Earth's gravity and variability. The spatial scale is submillimeter to global, and the temporal span is century to seconds or even smaller. The geodesy sessions at Fall Meeting highlight new results in each of these geodesy disciplines. The terrestrial reference system is the foundation of observational Earth science, and issues related to its derivation and definition, including the application of the new ITRF2005 (G41A, G42A, G43C). Gravity variability (G31A, G32A, G33A) is now measured with unprecedented global, spatial, and temporal resolution using satellite techniques, and the results of the GRACE mission have an impact on hydrology, oceanography, and glaciology (G33B, G33C), while providing new data for global change investigations. A vision for the future of geodesy that embraces all available geodetic techniques is expressed in the GGOS (Global Geodetic Observing System) project (G31A, G32A, G33A). Geodetic observations of surface kinematics from slow motion related to plate tectonics, with open problems in deforming zones (G12A, G13C, G14A, G21C), or more rapid or even catastrophically rapid events, are raw data for other Earth sciences (G13B, G22A, G23A, G24A, G24B, G43B, G52A), such as tectonophysics, seismology, hydrology, volcanology, and cryospheric science. In particular, rapid positioning using GPS data has new geodetic applications closely related with seismology, earthquakes, or volcano studies (G13B, G22A, G23A, G24A, G24B). Developing stable reference frames at continental scale, such as North America (G21C), has direct technical and scientific applications. Variations in Earth's rotation and orientation reflect global mass and angular momentum redistribution within the solid Earth, oceans, and atmosphere. In particular, coastal subsidence and global sea level rise require accurate geodetic measurements (G43B, G44A, G51A, G52A). Development or use of future satellite navigation systems (G11A, G21A) is an integral part of geodesy. New techniques such as INSAR (radar interferometry) (G53A, G54A) or laser scanning (G43D, G51B) provide new types of information, and have wide applications for the other Earth sciences as well. Understanding systematic errors in measurements or from data analysis, such as mitigation of atmospheric effects in satellite positioning (G43A, G51D), is also of key importance. True to its historical roots in serving society, geodesy provides basic information for the monitoring and mitigation of natural hazards.

Geomagnetism and Paleomagnetism

Twelve special sessions plus a general contributions session will be presented at 2007 AGU Fall Meeting in the Geomagnetism and Paleomagnetism section. The Bullard Lecture, given this year by Peter Olson, is appropriately entitled, "On the Trail of Bullard's Dynamo." Diverse contributions to the general session range from hydrothermal alteration of magnetic minerals to improved techniques for first-order reversal curve (FORC) diagrams, the effects of surface roughness on hysteresis properties, and the magnetic fabrics of deep crustal granulites. Papers investigating the nature of the present-day geomagnetic

field can be heard in special sessions about the geodynamics and statistical properties of terrestrial and planetary magnetic fields, new studies of electromagnetic induction, and electromagnetic induction in the oceans as seen from magnetic satellite missions. Reversals in dynamo models, quadrupole fields of Mercury, magnetotelluric and electromagnetic studies of Zimbabwe and the Moon, and motional induction in the oceans are among the topics covered. A special session on reversals, secular variation, and field strength of the ancient geomagnetic field will include papers on paleomagnetic data from lavas, archeomagnetic materials, and sediments as well as tests of secular variation models. Sedimentary paleomagnetism will be the focus of a special session on new models of detrital remanent magnetization (DRM) with talks about redeposition experiments, inclination error in red beds, and numerical modeling of DRM. Environmental magnetism will be covered with a special session on the environmagnetic fingerprints of lake sediments with a look at the magnetic parameters of loess, dust, magnetosomes, marine sediments, soils, and deltaic sediments. A special session about what is hot and what is cool in paleomagnetic measurements will highlight measurements at high and low temperatures of the Verwey and Morin transitions, the properties of greigite, and TEM observations of domain wall movements. The early development of the SQUID rock magnetometer will be featured in the last talk. This session leads into a special memorial tribute to Bill Gorree, who developed the SQUID rock magnetometer in 1969, a very important contribution to the field of paleomagnetism. The GP business meeting and reception will immediately follow this memorial tribute. Two special sessions investigate paleointensity methods by comparing the various methods available, e.g., single crystal, microwave, and multispecimen, and by evaluating how physical recording mechanisms affect paleointensity results. Finally, on Friday afternoon, a special session will be devoted to the paleomagnetism of orogenic settings including papers on paleomagnetism and the reconstruction of the Eurasian landmass, the rotation of Iberia, thrust sheet rotation in Wyoming, remagnetization during the India-Asia collision, and changes in apparent polar wander coincident with the Central Atlantic Magmatic Province.

Global Environmental Change

The Global Environmental Change (GEC) Focus Group cuts across a wide array of disciplines in its effort to provide a comprehensive venue for all aspects of environmental change research, not just climate change. Our purview ranges from local to regional to global phenomena.

While this topic has received tremendous attention in the press in recent years, it has also experienced a dramatic increase in abstracts and sessions. At the 2004 AGU Fall Meeting, 82 presentations were made at GEC sessions, with 164 presentations given last year and an astonishing 426 at this year's Fall Meeting. And this is on top of all the presentations sponsored by other AGU sections and cosponsored by our focus group.

One particular emphasis this year is research on climate change in specific environments, such as high-elevation mountain environments (GC31C, GC32A, GC33B, GC41A), northern Eurasia (GC21B, GC22A, GC23A), and the tropics (GC51A, GC54B). Several sessions focus on such cutting-edge topics as extreme weather (GC11A, GC13B), abrupt climate change and "tipping elements" (GC44A), and gas hydrates (GC14A). A common theme is looking at past climate and Earth-Sun scenarios in order to predict the future course of environmental change (GC31A, GC31B, GC41B, GC42A, GC43A, GC43B GC51A, GC53A, GC54A, GC54B, GC54C).

Hydrology

The continuing explosion of interdisciplinary interest in hydrologic sciences is leading to creative multiscale, multisensor approaches for quantifying and analyzing hydrological processes in the atmosphere, oceans, cryosphere, and terrestrial systems. This meeting includes 75 Hydrology sessions that span topics from fundamental contributions in physics and chemistry of transport and flow processes to novel constructions involving information technology and data synthesis. Increasing attention is being given to interdisciplinary focus areas including interactions among climate, rainfall patterns, land use, surface water, and groundwater cycling (H11F, H11K, H13E, H13H, H14E, H23E, H24B, H24D, H31A, H31E, H31I, H31K, H31M, H32C, H33C, H33I, H52C, H53D), including effects of climate change on issues ranging from groundwater recharge (H11F, H14E) to water resources management (H24A, H43A). Precipitation/evaporation focus areas include sessions on pan evaporation (H33B, H34D), rainfall measurement (H21E, H23K, H32A, H33A), prediction (H24C, H31B), and effects on streamflow (H13E, H32C). Surface water research areas represented include river restoration strategies and accomplishments (H31J, H33J, H34A), riverine ecosystem studies (H42A, H53B), streambed dynamics (H13D, H23J, H24F), and ecohydrology (H43I, H44C, H51H). Watershed and land surface sciences sessions include descriptions of tracer, seismic, and other geoinformatic data in watershed characterization and modeling (H11G, H12E, H13M, H21A, H21J, H31D). Topical sessions reflect creative technologies including digital terrain mapping (H43E, H51L, H52E, H53K) and use of data from the current generation of Earth Observing System satellites for watershed-scale and planetary-scale analyses of the hydrologic cycle. Developments in geomorphology including landform processes and riverine geomorphology are distributed among five sessions (H33L, H34B, H41B, H41F, H43F, H51E, H51I, H51M, H53C, H53L, H54B, H54E). Subsurface science highlights include carbon sequestration (H11J, H12D, H13F), multiphase transport at pore scales (H42C, H43J, H44D, H53E) and field scales (H11K, H13H) including heterogeneous media (H11I, H12C, H13K, H14C, H23G) and fractured media (H11B, H12A, H13C, H13J). The growth of interdisciplinary linkages among the subfields of hydrologic sciences is resulting in study of information structure and data management (H11K, H13H, H31H, H41I, H42D) involved in the synthesis of joint data types (H23A, H31G, H33K, H33M, H34C, H41E, H41H, H42B, H44A) toward characterization of uncertainty and predictability of hydrologic systems (H21K, H23B, H31G, H32B, H33K, H34C, H43B, H52A). Specialized topics include nanoparticle transport and fate (H51G, H54C), hydrologic impacts of wildfires (H43F, H51M), hydrochemistry in subsurface hydrology (H13G, H14D, H23D, H32D) and surface hydrology (H51K, H53A), remote sensing of natural hazards (H31L, H41G), and contaminant hydrology associated with agrichemicals, arsenic, alternative fuels, perchlorate, and pathogens (H11E, H13L, H33E, H33F, H41C, H41K, H53J, H54D).

Mineral and Rock Physics

Mineral and Rock Physics sessions cover topics pertaining to the physical properties and processes of planet-forming materials from the crust to the core of Earth as well as other solar system objects. A variety of sessions will focus on these subjects

from both experimental and theoretical points of view. Major themes this year are as follows:

Deep Interior of Earth (MR13A, MR13B, MR22A, MR23D, MR31A, MR31B, MR31D, MR32A, MR43C, MR52A, MR53A) These sessions explore topics related to the composition and physical properties deep in the Earth, from the mantle to the core. Specific subjects covered include Fe spin transition at high pressure, elastic properties and equations of state of deep Earth materials (MR22A, MR23D, MR31A, MR31B). Also covered are new experimental techniques at high pressure (MR23D, MR31A, MR43C, MR52A, MR53A) and the existence and properties of melts at high pressure (MR13A, MR13B, MR31D, MR32A).

Planetary Materials and Processes (MR11A, MR23A, MR43B, MR54A) These two sessions deal with the application of mineral physics to understanding planetary materials from meteorites to gas giant planets. Topics of particular interest include shocked chondrites, impact cratering processes (MR43B, MR54A), and experimental and numerically determined constraints on planetary ices (MR11A, MR23A).

Computational Mineral Physics (MR12A, MR13B, MR21A, MR23B, MR23C, MR32A) These special sessions broadly cover the application of computational methods to mineral physics and material properties that complement experimental work, and provide a theoretical framework for understanding geomaterials. Topics include first principles calculations of planetary materials properties (MR12A, MR23C), numerical simulations of transport properties (MR12A, MR23C), simulations of silicate melt properties (MR13B, MR32A), and computational methods describing rock fabrics (MR21A, MR23B).

Kinetic and Dynamic Earth Processes (MR13C, MR33A, MR34A, MR43A, MR43B, MR54A) These sessions cover the dynamic and kinetic processes at work within the Earth and other planets. Specific topics of interest include thermal and chemical diffusion, defects, and electrical conductivity (MR13C, MR33A); deformation at high pressure, and deep Earth rheology (MR34A, MR43A); and shock processes and dynamic compression (MR43B, MR54A).

Near Surface (MR21A, MR23B, MR31C) These sessions cover mineral and rock physics topics in lower-pressure environments. Topics include material properties of sediments and crustal rocks (MR31C) as well as numerical simulations of rock texture development (MR21A, MR23B).

Mineral and Rock Physics is a highly interdisciplinary focus group with close ties to the SEDI focus group, and VGP, T, and S sections. Many sessions within these other disciplines are also cosponsored by MRP.

Near-Surface Geophysics

Near-Surface Geophysics investigations target the critical zone from the surface to depths of tens to hundreds of meters. A major theme at this year's meeting is the role of near-surface geophysics in natural hazards assessment. Papers illustrate active and passive techniques for fault, earthquake, volcano, sinkhole, and tsunami investigations. Hazards specific to urban areas and archaeological sites are addressed (Near-Surface Geophysics and Natural Hazards). In a session focused on high-resolution studies of active faults (Fault Imaging and Seismic Hazard Assessment), many studies integrate multiple methods in novel ways, including P and S wave seismic techniques (land and marine, reflection and refraction), GPR, gravity, lidar, resistivity, and AMT (audio magnetotelluric). Presentations address seismic hazards based on fault geometry, historical seismicity, and slip rate. A Development and Applications of Airborne Methods session highlights new instrumentation, novel integrations of instruments, and new methods to facilitate geologic interpretation. Presentations illustrate the dramatic increase in resolution and applications of airborne geophysical data from regional tectonic studies to local groundwater and volcanic landslide hazard assessments.

Other sessions highlight the role of geophysics in an even broader spectrum of near-surface processes. A predominantly student-led Biogeophysics session (with support from the National Science Foundation) showcases recent advances in the near-surface geophysics contribution to monitoring microbial processes. The Induced Polarization (IP), Self-Potential (SP), and Seismic-Electric Coupling for Near-Surface Applications session combines recent advances in IP and SP modeling methods with general review papers that provide a comprehensive understanding of the current level of science. The Exploration of the Cryosphere Using Near-Surface Geophysical Techniques session will bring together the near-surface and cryospheric communities during International Polar Year. Highlights include, for example, 3-D imaging of previously glaciated parts of the Norwegian shelf, mapping permafrost using geophysical methods, the latest methods and results in radioglaciology, and active source seismic methods.

Nonlinear Geophysics

The interdisciplinary nature of the Nonlinear Geophysics focus group is reflected in the wide range of sessions related to atmospheric science, oceanography, geophysics, geology, and space and laboratory plasmas. There are seven special sessions and one general session in this meeting's Nonlinear Geophysics Focus Group. Understanding Critical Phenomena in Natural Systems presents papers on spatiotemporal complexity, self-organized criticality, and turbulent energy cascades in natural systems involving seismic activity, geomagnetic activity, solar flares, and turbulence. Nonlinear phenomena in plasmas such as solitary waves, chaotic spatial and temporal structures, instabilities, MHD turbulence, and wave-particle and wave-wave interactions are discussed in Nonlinear Phenomena in Space and Laboratory Plasmas. Relaxation processes in space and laboratory plasmas through various approaches are discussed in Relaxation Processes in Space Plasmas. Application of scaling laws to probabilistic hazard assessment and risk is the focus of Natural Hazards: Risk Assessment and Scaling. The hazards discussed in this session include wildfires, earthquakes, extreme climate events, cyclones, space weather, and tsunamis. Papers related to establishing the significance of weather and climate regimes and the relevance of unstable solutions and their relationship with low-frequency variability and predictability in large models are presented in State Space Structure and Predictability in Large Models of the Atmosphere and Ocean. Complex nonlinear interactions between landscape development and Aeolian processes governing sediment transport, wind erosion, and landform dynamics on a variety of scales are discussed in Aeolian System Dynamics: Form and Processes. The papers presented in General Contributions include nonlinear methods in climate and oceanography, complexity of earthquakes, and geophysical inverse problems. The 2007 Lorenz Lecture, entitled "Role of Fractals in Solid Earth Geophysics," is delivered by Vijay Prasad Dimri from the National Geophysical Research Institute, Hyderabad, India.

Ocean Sciences

Gas hydrate systems are once again the focus of one of the largest special sessions within Ocean Sciences (Marine and Terrestrial Gas Hydrate Systems: Geologic Similarities and Differences (OS11C, OS12A, OS21A, OS22A, OS23A)), indicating the continued interest of the community in these deposits, in response to their recognized resource potential, their relationship to geohazards, and their role in climate change. Related sessions that focus on geohazards include Identification and Interpretation of Tsunami Deposits (OS13B) and Land-Ocean-Atmospheric Processes Associated With Natural and Man-Made Hazards (OS23B, OS31B).

The Coastal Models and Data: Simulation, Synthesis, and Integration (OS24A, OS41A, OS52A) session focuses on bringing data and models to bear on quantifying anthropogenic impacts on coastal environments, and also on evaluating and planning restoration of damaged coastal environments. A similar focus on mining existing data, and developing strategies for deriving maximum benefit from existing data sets, is targeted by the Scientific Applications of Continental Shelf Data (OS53A) session.

Several sessions focus on different aspects of ocean circulation. Modeling and Observations of Nonhydrostatic Flows in Coastal Water (OS42B, OS53B) provides a forum for discussing field, laboratory, and modeling approaches for understanding this category of water mass movement. Highlights of the Ocean Circulation: Regional and Global Studies Using Observations and Models (OS13A), Global and Basin Circulation Studies: Tracers and Models (OS33C), and Dynamics of the Southwest Pacific Ocean and the South Pacific Convergenze Zone (SPCZ) (OS41B, OS44A) sessions include the use of high-resolution ocean general circulation models (OCGMS) to reveal more and more information about the response of the ocean to climate variations, the form and structure of ENSO cycles, and the interplay between thermohaline structure and meridional circulation. As computational power increases, both models and databases become increasingly more sophisticated tools in the study of the ocean-climate systems. Near the coasts, oceanographers are using remote and autonomous vehicles together with advances in control theory to better study the coastal circulations and ecology. This type of adaptive sampling, highlighted in the New Methods in Observational Oceanography (OS51B) session, is an exciting new step in removing sampling bias.

The role of the oceans in global climate change, and the ocean as a recorder and/or predictor of climate evolution, are topics to be covered by several OS sessions: Marine Biotic Response to Global Warming: Past and Present (OS11A, OS14A), Silicon Isotopes in the Ocean: Proxy Development and Paleoceanographic Applications (OS24B), The Cariaco Basin: Connecting Climate Change, Upwelling, and Anoxia (OS33B, OS43C), and Marine Geochemistry and Biology (OS11B). These sessions focus on different aspects of the ocean's role in global climate change. Topics of interest include ocean acidification, stratification, nutrient cycling, food web dynamics, global element cycles, and pathways. A related session, Mountains to Ocean Deep: Tracking Material Fluxes and Processes During Climatic Change With New and Better Proxies (OS31C, OS32A, OS33A), emphasizes the expansion of the use of proxies to track and quantify key fluxes to the ocean of essential nutrients, including riverine, atmospheric, and groundwater pathways.

Oceanographic Studies in the Eastern Arctic Basin During the International Polar Year (OS41C, OS42A, OS43A) highlights results from several major oceanographic research expeditions that were carried out in the eastern Arctic Basin during the International Polar Year, with complementary objectives to characterize geological, biological, and chemical processes in this sparsely sampled region, providing glimpses into the tectonic and paleoceanographic history of this poorly known ocean. Related session High-Latitude Oceanography (OS43B) focuses on physical oceanographic and biogeochemical studies in the Arctic, and Advances in Tools, Techniques, and Methods for Scientific Drilling (OS34A, OS51A) has a special focus on new or advanced instrumentation and tools capable of operating under polar or otherwise extreme climatic conditions, as well as application of new physical and biogeochemical technologies to ocean drilling in general.

Paleoceanography and Paleoclimatology

The Paleoceanography and Paleoclimatology Focus Group received 631 abstracts, an increase of 4.6% from 2006. This enabled the group to schedule 31 oral sessions, including three general oral sessions as well as the Emiliani Lecture speaker, David Lea, who will speak Tuesday afternoon on tropical climate evolution during the ice ages. Some further highlights of the group this year include a series of oral sessions covering the use of geochemical proxies to interpret past and present climate change, the Arctic, monsoons, and organic geochemistry.

Geochemical Proxies In conjunction with the biomineralization session hosted by the Biogeosciences section, five additional sessions will cover the use of geochemical and dissolution proxies in order to interpret past and present changes in oceanic temperature, salinity, and the carbon cycle.

Monsoons High-resolution proxy records, instrumental records, and model simulations of monsoons are highlighted in two oral sessions. Tree rings, corals, ice cores, speleothems, and sediment data will be presented in order to examine changes of the global monsoon in relationship to the modern and paleo-oceans.

High-Latitude Issues In recognition of the International Polar Year, there are sessions on Arctic environmental change from a paleoceanography perspective and a special focus on the past two millennia. These sessions further a fundamental understanding of this enigmatic region of our planet.

Organic Tracers The highest proportion of abstracts was submitted to a session on the use of organic proxies in the study of climatic and environmental change. These include modern biomarker calibrations, stable isotope proxies, and radiocarbon analyses of organic compounds. The use of organic proxies is a growth area of research and offers exciting possibilities for addressing paleoclimatological issues.

Planetary Sciences

The Planetary Sciences Section includes a broad range of topics, but at this Fall Meeting there is a strong emphasis on both Mars science and studies of objects in the outer solar system. More than 650 abstracts submitted this year to the section are distributed between oral and poster sessions throughout the week. Exciting results from current orbiter missions operating at Mars will be highlighted in several sessions, including (but not limited to) Composition, Stratigraphy, and Structure of the Phyllosian/Noachian Crust and Implications for Early Mars; Views of an Icy Mars Through the Eyes of MRO; and Geomorphology

of Mars: Insights Into the Processes That Shape the Martian Surface. Analysis of spacecraft data of Mars is greatly aided through both Earth analog studies and laboratory work, as illustrated in the content of the sessions Recent Climate Change of Mars: Insights From Terrestrial Analogs, and Laboratory Investigations Related to Analyses of Mars Data. Sessions related to investigations of Mars are scheduled from Monday to Wednesday, with results from studies of other terrestrial planets and Earth's Moon presented on Thursday. Ongoing investigations in the outer solar system provide an interesting complement to the studies of rocky planets. A small but remarkably active icy moon of Saturn continues to attract considerable attention; the session Enceladus: Possibilities for Water and Life presents current ideas about this unique place, on Monday morning. Immediately following the Enceladus session are sessions entitled Mostly Icy, Never Dull: The Diverse Natures of the Outer Planet Satellites, which expands the discussion to icy objects throughout the outer solar system. Return to Europa (and its companion sessions, on Friday) presents recent evaluations of the smallest Galilean satellite at Jupiter, along with prospects for future studies of this icy moon. The largest moon of Saturn was the target of the Huygens probe in 2004, and it continues to be studied by the Cassini orbiter; sessions entitled Saturn's Titan: An Integrated Perspective present current ideas resulting from an abundance of data for this haze-shrouded object. The Plasma Environment of Saturn, Its Satellites, and Rings describes how the Saturn system interacts with the space environment in which it resides. The New Horizons spacecraft is on its way to study Pluto several years from now, but its journey took it past Jupiter, providing the opportunity to point its instruments at the largest planet; New Horizons—and the Upheaval—at Jupiter presents results obtained from the flyby encounter.

Three special lectures are sponsored by the Planetary Sciences section at 2007 Fall Meeting. The Shoemaker Lecture this year is entitled "The Geology of Mars as Seen by MRO's HiRISE"; it will be given Wednesday afternoon by Alfred McEwen, the principal investigator of the High Resolution Imaging Science Experiment (HiRISE) on the Mars Reconnaissance Orbiter. The Whipple Lecture is associated with the Whipple Award, presented by the section to a renowned researcher in honor of his or her contributions to planetary science. Raymond Arvidson will give the Whipple Lecture on Wednesday afternoon, to discuss "The Importance of a Program of Mars Exploration." The Sagan Lecture is "Exploring Titan, an Earth-Like Organic Paradise," given by Ralph Lorenz on Thursday evening in the Moscone Center at a session that is open to the public.

Public Affairs

Many papers being presented at 2007 Fall Meeting have implications for public policy and natural resources management, and some papers explicitly explore those implications. The AGU Committee on Public Affairs has designated sessions as Public Affairs (PA) joint sessions if they include papers that fall into either of those categories.

Three themes stand out in the papers and sessions that incorporate public affairs: climate change, natural hazards, and interdisciplinary cooperation.

Three Union sessions deal with science and policy aspects of climate change. The Intergovernmental Panel on Climate Change 2007: Results and Responses (U41A, U43D) presents highlights of the IPCC. The sessions of Cooler Living in a Warming World (U41D/U42A/U43C) look specifically at policy responses with respect to carbon, with special emphasis on carbon capture. Climate Sensitivity From Modeling, Current Observations, and Paleoclimate Data (U43A, U51B) examines a broad range of factors affecting climate sensitivity. Policy aspects of climate change are also addressed in a variety of sessions cosponsored by PA, particularly the 40 cosponsored Atmospheric Sciences sessions, the four cosponsored sessions in Paleoceanography and Paleoclimatology, and the 26 Global Climate Change sessions.

Interdisciplinary cooperation is central to another Union session, Geosciences Research and Education in Developing Countries: Strengthening and Promoting International Collaboration (U33A) and to the Public Affairs session, Determining Socioeconomic Benefits of Earth Science (PA24A, PA33A). Likewise, the nine PA-cosponsored sessions in Earth and Space Science Informatics and 36 cosponsored sessions in Biogeosciences have a large number of papers addressing questions of interdisciplinary cooperation and relevance to public affairs and policy.

The public policy aspects of geophysical natural hazards are raised in papers in a wide range of technical sessions in a number of disciplines. The Union session The 2007 Sumatra Seismic Sequence (U51A, U53A) addresses some tsunami-related issues, and there are numerous natural-hazards policy-relevant talks within seven cosponsored sessions in Geodesy, four cosponsored sessions in Nonlinear Geophysics, five cosponsored sessions in Near-Surface Geophysics, eight cosponsored sessions in Tectonophysics, and six cosponsored sessions in Ocean Sciences. Highlights among the 17 cosponsored sessions in Seismology include the Earthquake Early Warning sessions (S13C, S21D, S23E, S24B), which examine the science, technology, and policy of seismic hazards around the world.

Study of the Earth's Deep Interior

Study of the Earth's Deep Interior (DI) sessions focus on the structure, chemistry, and dynamics of the entire Earth interior, and highlight the benefits of a multidisciplinary approach in researching the inaccessible Earth. DI sessions are cross-listed with a variety of AGU sections, highlighting the multidisciplinary nature of the research.

Sessions DI33A, DI41B, DI42A, and DI43A show that volatiles in Earth's deep interior, such as hydrogen, carbon, and sulfur, stored in various forms and concentrations, are known to have a significant effect on the generation of partial melts and play a key role in the dynamics and evolution of the planet.

Seismic discontinuities in the mantle also provide strong constraints on Earth structure, dynamics, and evolution. Sessions DI51B and DI53A will highlight recent research from the fields of seismology, mineral physics, geochemistry, petrology, and geodynamics that seeks to better understand phase transitions.

Deep earthquakes are the focus of DI51A, which highlights seismicity patterns of deep earthquakes, seismic observations of the rupture properties, laboratory experiments on slab minerals, and seismic, petrologic, and thermal characterizations of subducting slabs. The multidisciplinary approach improves determination of the plausibility of different proposed source mechanisms.

Sessions DI41A and DI44A emphasize understanding the relationships among the thermodynamic variables, pressure, volume, and temperature described by an equation of state. Equations of state for liquid and solid phases will be discussed up to megabar pressures for both single-phase and multiphase

experiments. Some specific topics include inelastic relaxation, deformation, the role of differential stress, the light element in the core, and pressure calibration problems.

State-of-the-art geodynamic calculations utilize geological, geophysical, and geochemical constraints to explain lithospheric to whole mantle scale processes. Sessions DI14A and DI21A discuss technical aspects of modeling plumes and plates and the physics of modeling long-term geological and geodynamic processes.

Deeper yet, the past few years have witnessed a broad range of new theories and discoveries on the structure, composition, energetics, and dynamics of Earth's core, as well as the cores of other planets. DI Sessions DI24A and DI31A present recent results from a number of disciplines, including seismology, geodynamics, mineral physics, geomagnetism, paleomagnetism, geodesy, and geodynamics.

Seismology

Seismology sessions span a wide range of earthquake source and structural investigations using a variety of new data sets. Earthquake early warning and prediction efforts are highlighted, as Sessions S21D, S23E, and S24B) review innovative approaches and implementation of rapid earthquake information and systems. Sessions S32B, S33B, and S41D describe cases of preseismic and coseismic electromagnetic phenomena, and S31D, S32B, and S33C document progress made within the multinational Collaboratory for the Study of Earthquake Predictability (CSEP). Earthquake rupture studies cover laboratory and theoretical investigations of fault slip (S11E, S12B, S13D, S14B, S21B), as well as individual recent earthquakes (S13A). Earthquake and tsunami hazards, both global (S11A, S14C) and focused on the Indian Ocean (S23D, S24A, S31C), are highlighted in conjunction with sessions describing efforts to provide tsunami warnings (S43C, S44A, S51C, S53A) and ground motion information through ShakeMap (S51A). Notable structural studies describe the development and application of new methodologies for imaging Earth's interior. Sessions S23B, S31E, S32A, and S34B combine theoretical and observational advances in seismic tomography; S33E, S34A, and S41A address new developments in providing and using high- and low-frequency data; and S51D and S53B focus on extracting information from multiple scattered waves. Images of Earth's interior are presented and interpreted over various length scales, highlighted by results from USArray (S43D, S44B, S41B) and other regional studies (S33A, S41C, S42A). Finally, Sessions S11D, S12A, S13F, and S23A) focus on merging the marine seismology interests of the broad communities in petroleum exploration, global seismic structure, seafloor geological processes, and ocean acoustics.

SPA-Solar and Heliospheric Physics

Heliophysics spans the electromagnetic fields and samples of matter that fill the voids between the solid bodies in the solar system. The SH sessions this year cover the latest results in our efforts to expand the observations of inner heliospheric boundaries with highly resolved solar images (Observational and Theoretical Analyses of Coronal Structures and Dynamics in the Hinode Era) and with multipoint measurements in the inner heliosphere (Solar and Heliospheric Science With Multipoint Observations). Looking closer at the details presents challenges to in situ measurements, laboratory studies, and data management (Magnetic Reconnection in Laboratory, Magnetospheric, and Solar Plasmas; Analysis Techniques for Solar and Heliospheric Data; The Virtual Heliophysics Great Observatory: An Emerging Tool for Research). At the outer boundaries, the Voyagers (Advances and Challenges in the Physics of the Distant Solar Wind and the Heliosheath) are providing preliminary conclusions about the outer reaches of the heliosphere. Energetic particles (Observations and Theories for Solar 3He-Rich Events) and solar wind plasma and fields (Solar Wind and Heliospheric Turbulence: Dynamics of Small-Scale Fluctuations) also continue to provide information about how the Sun's atmosphere evolves and ultimately connects to the planets and their satellites (ENAs From Solar Wind Interaction With the Atmospheres, Exospheres, and Regoliths of Earth, Mars, Venus, the Moon, and Other Solar System Bodies).

SPA-Magnetospheric Physics

The SPA-Magnetospheric Physics section has a wide-ranging set of contributed sessions and 14 special sessions. Contributed sessions cover topics in auroral physics, polar cap and ionospheric physics, magnetospheric substorms, the inner magnetosphere, and magnetic reconnection as well as space science from the plasma sheet and magnetotail to the Earth's dayside magnetopause and bow shock. Special sessions include a very large one on the conjunction of theory, modeling, and coordinated multipoint measurements (both ground- and space-based) being used to distinguish between proposed mechanisms for phenomena from the bow shock to the radiation belts. There is a session on the recent advances in space weather prediction arising from scientific understanding of the Sun-Earth system through numerical simulations, their validation with data, and especially data assimilation techniques; one on the current state of the art in theory, modeling, and observations connecting electromagnetic waves with disturbances in plasma density and temperature occurring in the ionosphere and magnetosphere of the Earth at high latitudes; one focusing on the understanding through theory, modeling, and observations of how the ionosphere convection patterns are influenced by the balance between the dayside and nightside merging rates under various IMF conditions; and a forum that explores the connection between statistical properties of multiscale fluctuations present in ground-based and in situ observations and large-scale energy release events such as geomagnetic storms and substorms. A special session of interest to the magnetospheric and planetary communities highlights recent results from the New Horizons spacecraft during its gravity-assist flyby of Jupiter on its way to Pluto and from the Cassini spacecraft in orbit around Saturn. Radiation belt physics with an emphasis on an integrated view of the inner magnetosphere is the topic for a timely special session. Special sessions will be presented on the role the cusp plays in coupling between the ionosphere and boundary layers, on the entropy constraints on plasma entry, tail transport, and magnetospheric state transitions, on energetic ions in geospace, on recent developments in theory and observations of particle acceleration, and on the magnetospheric response to sudden changes of the IMF/solar wind conditions. With the large number of spacecraft making measurements at geosynchronous orbit, the SPA sessions are rounded out with a special session devoted to this key region that overlaps the dynamic outer radiation belts, includes the transition region between tail-like and dipole magnetic field lines, and is also the region where merging of two key current systems, the tail current and the ring current, occurs.

SPA-Aeronomy

Aeronomy sessions deal with the physics and chemistry of the upper atmosphere and ionosphere, including their response to solar variability and interactions with the magnetosphere and lower atmosphere. New results from the recently launched Aeronomy of Ice in the Mesosphere (AIM) satellite will be presented in a session on noctilucent clouds and polar mesospheric clouds (NLS/PMC).

The mesosphere and lower thermosphere will be explored in-depth in sessions on science from the TIMED mission and the CEDAR program, and in sessions on Sun-Earth coupling via energetic particles.

Space weather in the ionosphere and thermosphere, as well as studies on the basic properties of these regions, will be reported in sessions covering the equatorial ionosphere, magnetospheric effects on the ionosphere and thermosphere, and new techniques for observing the structure and variability of these regions. In addition, general contributions will cover a wide variety of topics, from ionospheric modification by powerful radio waves to precision measurements of thermospheric density variations through satellite drag.

The Nicolet Lecture, "Geospace Imaging: The Big Picture," by Robert Meier, will take a broad look at the possibilities of understanding Sun-Earth coupling through innovative imaging techniques. The recent progression of global imaging missions and the encouraging efforts to interface models of the various geospace regions give hope that one day we may actually be able to literally see "the big picture" crucial for understanding the space environment as a whole system.

Tectonophysics

This year, four themes are featured within the Tectonophysics program. Deformation of the continental lithosphere is the focus of sessions on continental collision (T22C, T23G, T31B), mantle lithosphere foundering (T31E, T33A), extensional faulting (T21D, T22A, T31C, T31F, T32A, T33D, T34A, T41A), rift margins (T31F, T32A, T33D, T34A, T41A), and fault imaging (T51C, T53C, T54A). While many of these sessions concentrate on the mechanics and timing of deformation, others emphasize the role of rheological layering (T31D, T34C) and anisotrophy (T12B, T13B) in focusing deformation. Detailed studies on fault mechanics and sediment deformation compose another major theme that includes sessions ranging from faulting in the oceanic crust (T22E, T23B) to modeling and experimental studies on the behavior of fault zones (T11A, T14A, T41B, T43D, T44B), especially those forming in terrestrial sediment (T33C, T41F, T42C, T43E). Subduction zones are the focus of another theme that includes theoretical modeling of subduction zone dynamics (T51B, T53D, T54B), batholith complexes in continental arc settings (T11B, T14B), the interworkings of the IBM and Centam subduction "factories" (T41C, T43C, T44C) such as those in South America (T31A, T33E, T34B) and the Caribbean (T11D, T13C), and the transition from subduction to collisional processes (T41D, T42A, T44A, T51A). Finally, a group of sessions concentrate on the earthquake cycle (T31G, T32C, T33F, T43B) and slow-slip tectonics (T11F, T12C, T13F, T21A), earthquake and tsunami hazards associated with megathrust faults (T51E, T52A, T53A) with particular focus on south Asia (T13E, T22D, T23F, T31G, T32C, T33F, T43B), the Dead Sea transform fault (T41E, T42B, T43A), intraplate earthquakes (T51D, T54C), and neotectonic studies in active mountain belts around the world (T11G, T12D, T13H, T14C, T21E, T23C, T23D, T31D, T34C). These sessions are important for understanding the seismic risk of populous societies in this region and to prepare for the possibility of future destructive events. In particular, a late-breaking Union session on the recent Sumatra aftershock sequence (U51A, U53A, U54A) will attract much attention. This year's Birch Lecture will be given by Jean-Phillipe Avouac on the deformation of mountain belts (T24A). Other noteworthy sessions include Arctic tectonics and recognition of the International Polar Year (T11E, T13D), the geodynamics of the Mesozoic Pacific basins (T12A, T13A), mid-ocean ridge processes (T32B, T33B, T51F, T52B, T53B), and the mechanics of the Sevier Desert detachment fault that provides a forum for a continental drilling proposal (T21D, T22A, T31C). Studies of deep lithosphere and mantle interactions featured in Tectonophysics (T11C, T13G, T21B, T21C, T22B, T23A, T23E) are also reflected in several Union sessions on deep Earth processes, mantle convection (U11B, U12A, U13C, U14A, U21A, U21B), the Hadean Earth (U11A, U21D), and the relationship of plate motion to the Earth's interior (U13A, U34A).

Volcanology, Geochemistry, and Petrology

Volcanology, Geochemistry, and Petrology sessions focus on magmas and fluids from the depths of the Earth to the surface. Topics range from the recycling of deep continental lithosphere and ultrahigh-pressure rocks, to the dynamics of explosive eruptions and weathering processes across natural landscapes. One broad theme integrates volcanic with plutonic perspectives to explore the dynamics and longevity of silicic magma systems. Magmas are tracked through fractures, into storage reservoirs, as lava flows, pyroclastic deposits, and ash clouds. Multiple sessions focus on fluid-mineral-rock interactions, from the upper mantle and continental crust, to soils and environmental nanoparticles. Coso and Yellowstone serve as natural laboratories for studies on geothermal energy utilization and volcano dynamics. Other sessions highlight frontiers in isotope fractionation, mass spectrometry, and geochronology, with one goal to link precise dates to accurate ages in continental tectonics. Geochemists and seismologists unite to discuss changing views on the Earth's mantle, complementing a Union session on chemical geodynamics. Geodynamic models will be linked to geochemical and geophysical observations across volcanic arcs and back arcs. A related session will focus on subduction volcanism at continental margins, inspired by the life and work of James Luhr. Experimental approaches to the study of fluids from the ocean to the mantle will be highlighted in a session that recognizes the lasting contributions of John Holloway. This year's Bowen Award winners are Hugh O'Neill and Eiji Ohtani, and both will deliver Bowen Lectures in a special session in their honor.