Project highlights

18 FEBRUARY 2020

MARINE DEBRIS MONITORING & MODELING IN INDONESIA

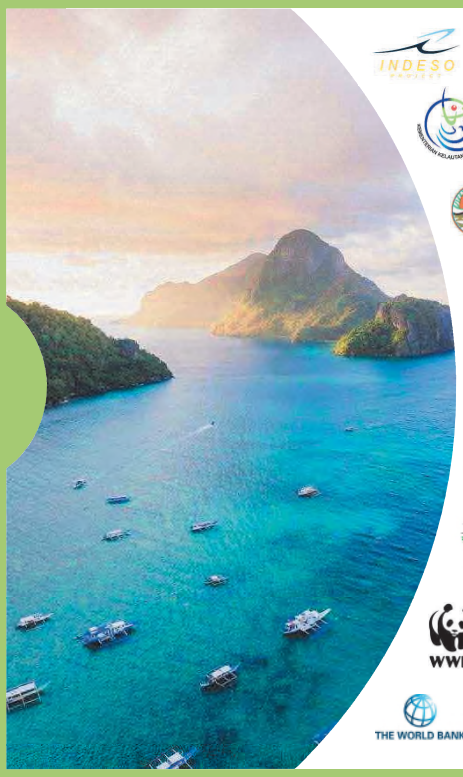
Who we are:

Created in 1986 by CNES, the French Space Agency, and IFREMER, the French Oceanography Research Institute in order to operate the NASA – NOAA - CNES Argos program

750 employees – 26 offices – 130M EUR turnover

What we do:

- Sustainable management of fisheries
- Maritime surveillance and security
- Ocean, marine pollution & wildlife monitoring
- Land & fleet monitoring



CLS in Indonesia

- *established in 2004*
- *More than 20 employees*
- *Working with Governmental institutions, NGO's and private groups*

Satellite radar surveillance center

Marine pollution monitoring & mitigation

Oceanography data center

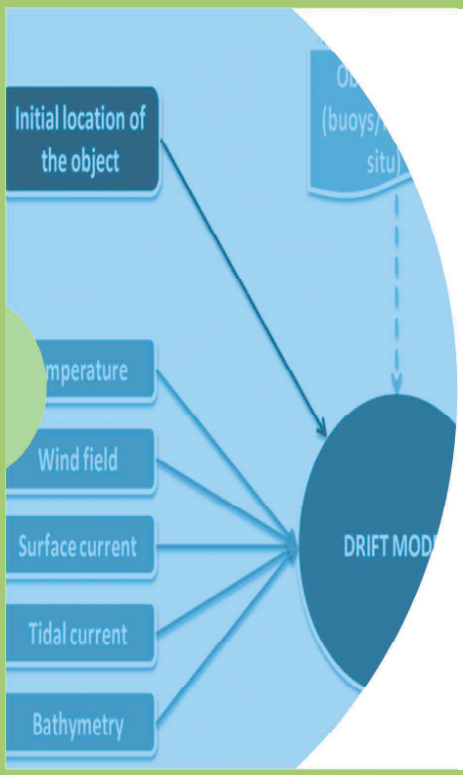
Ground motion monitoring

Vessel monitoring & tracking center

Vehicles fleet, equipment, personnel security & monitoring

Anti-piracy Ship Security Alert System

Marine wildlife tracking



WHAT THE PROGRAM CONSISTS IN: BETTER UNDERSTANDING FOR BETTER MANAGING

How accurate are the model?

This 2-years program (2020-2021) is the combination of:

- ***oceanography** simulation, tests and studies using existing model*
- *insitu marine debris-like **drifters** tracking system*

*Comparing model and actual drift will improve the model and help to identify **statistically** presence of **debris hotspots** at sea*

*All the results will be displayed and useable by **trained KKP personnel** via a **webportal**. They will be able to **run drift simulation themselves**.*

*Once some statistical hotspots have been identified, **verification & survey at sea or on shore** will be performed to validate / optimize the system further*

MARINE DEBRIS TRACKING SYSTEM

- 70 marine debris-like drifters to compare with the drift simulation
  - World Bank: 20 Marge-T
  - AFD: 50 marine debris-like trackers

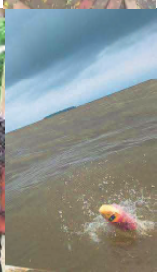
- Marge-T:
  - Overall release campaign design is ongoing
  - Unfriendly collection counter plan has been set with camouflage + ownership stickers

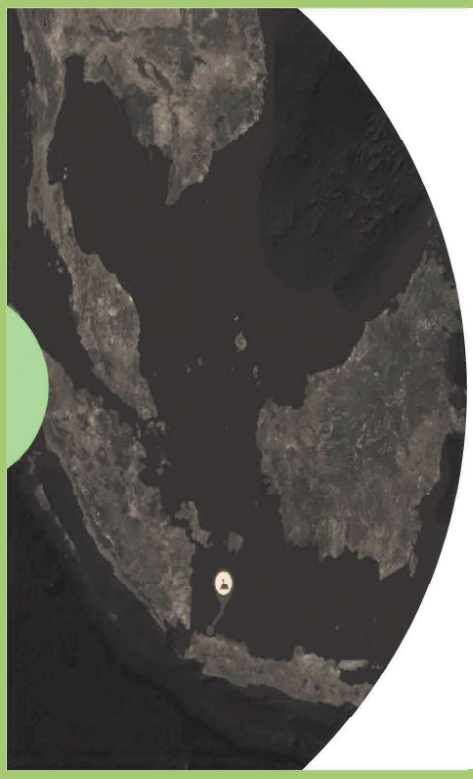
- Additional trackers:
  We may consider several types of trackers (Marge-T and others) as we go if it is scientifically supporting a better understanding of the overall situation

MARGE-T RELEASE PROGRAM

- 2 Marge-T have been released as a trial on Friday 7 March 2020 by KKP, KHLK, Menkomar and CLS at the Cisadane river mouth
  - The first one beached on shore a few hours later and was collected back by a fisherman who called the number so we could collect it back
    It was released again on Thursday 13 March
  - The second one is still drifting within the Java sea

- Target is to release the other 18 within the next 20 months and compare with the marine debris hotspots modelling





MARGE-T DRIFT FROM CISADANE RIVER MOUTH

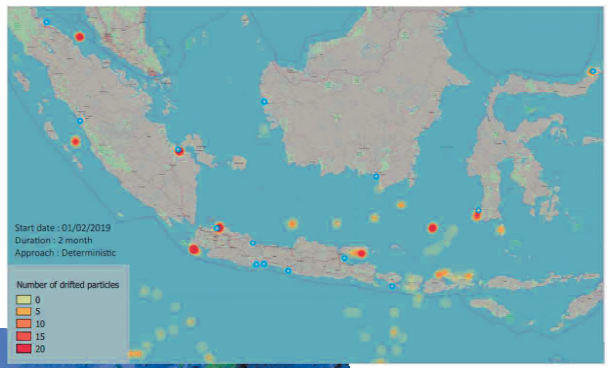
- The first Marge-T beached on shore and was collected by a fisherman

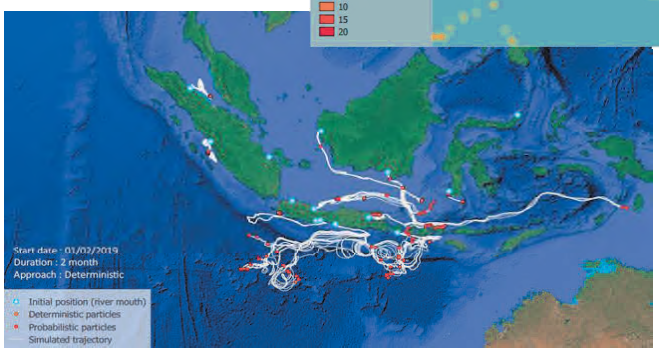
- The second Marge-T is still drifting within the Java sea

DRIFT PROBABILISTIC MODELING STUDY

World Bank: Initial study on a few rivers

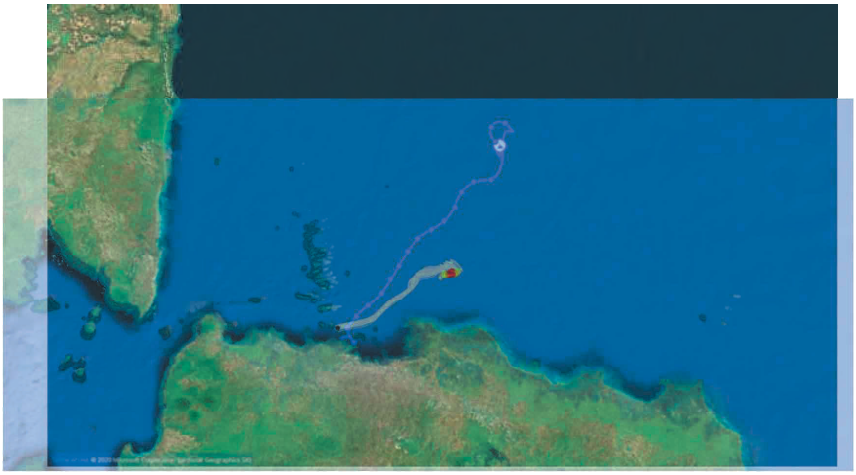
AFD: Additional sensitivity tests, zoom on test case, Lagrangian experiments by IRD/Mercator/CLS





COMPARING THE MODEL WITH THE DRIFTERS TRAJECTORY – THE DRIFTER 1 CASE

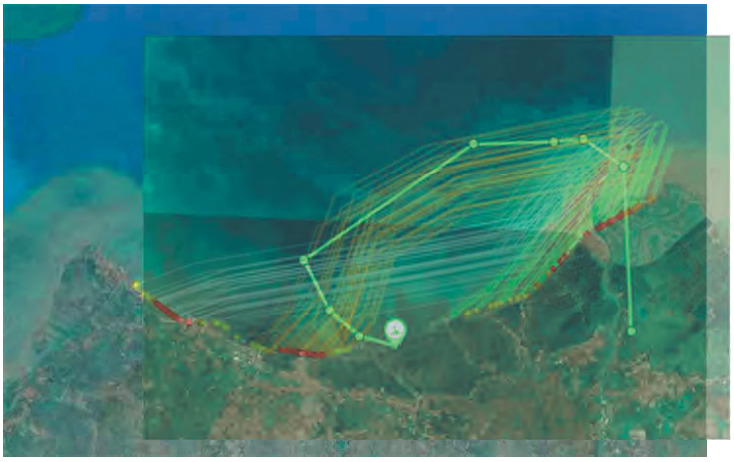
The last 2 weeks Cisadane river mouth first case (Jakarta area)



The Marge-T drift does not clearly confirm the simulation run requiring more parameter adjustments or interpretation…

COMPARING THE MODEL WITH THE DRIFTERS TRAJECTORY – THE DRIFTER 2 CASE

The last week Cisadane river mouth second case (Jakarta area)



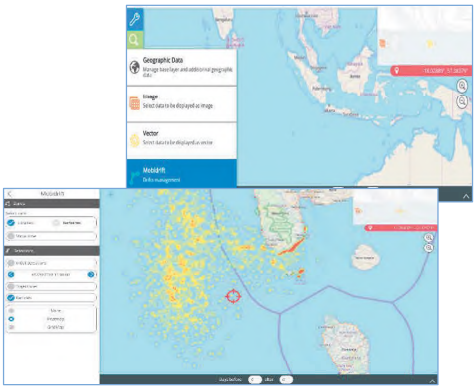
The Marge-T drift confirms a significant part of the simulation run but still allows modelling parameters adjustment or interpretation…

MARINE LITTER WEBPORTAL

User management

Multiple layers visualization (tracked buoys, drift modeling)

Pan and zoom functionalities on the region of interest



World Bank:

- Development of the webportal
- KKP infrastructure integration
- Remote access to drift simulation module
- Integration of data

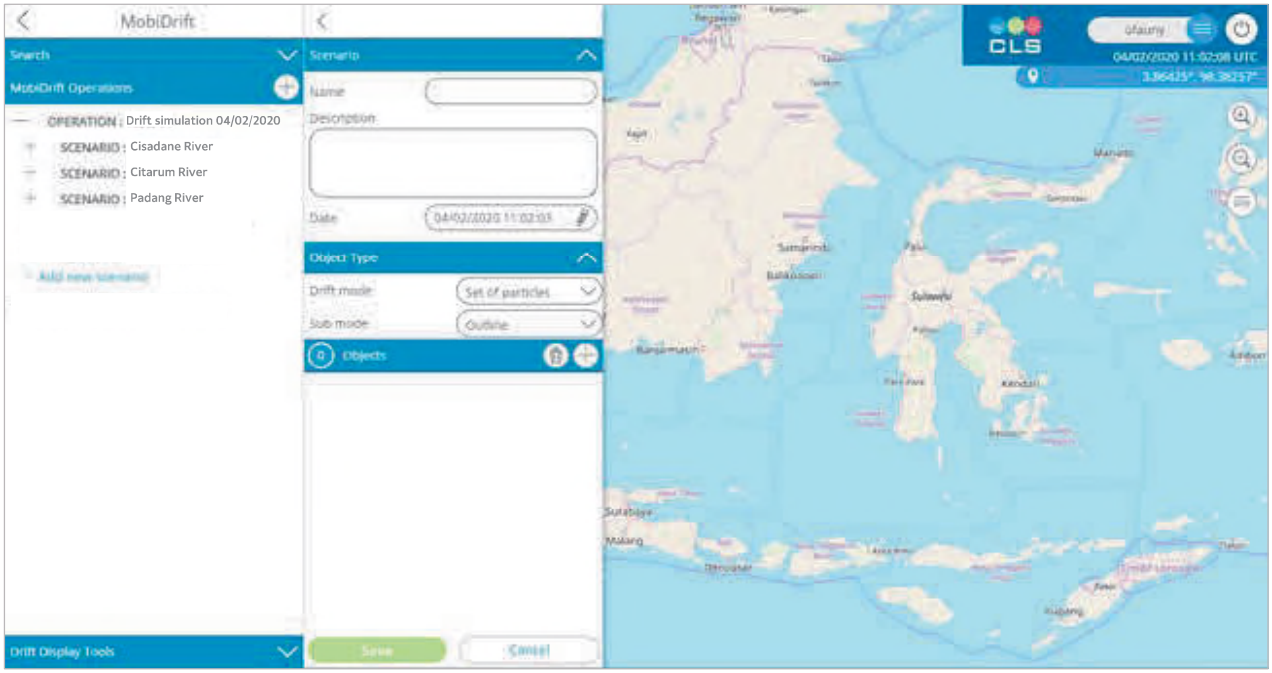
AFD:

- Integration of the additional data and studies

PLATFORM ACCESS

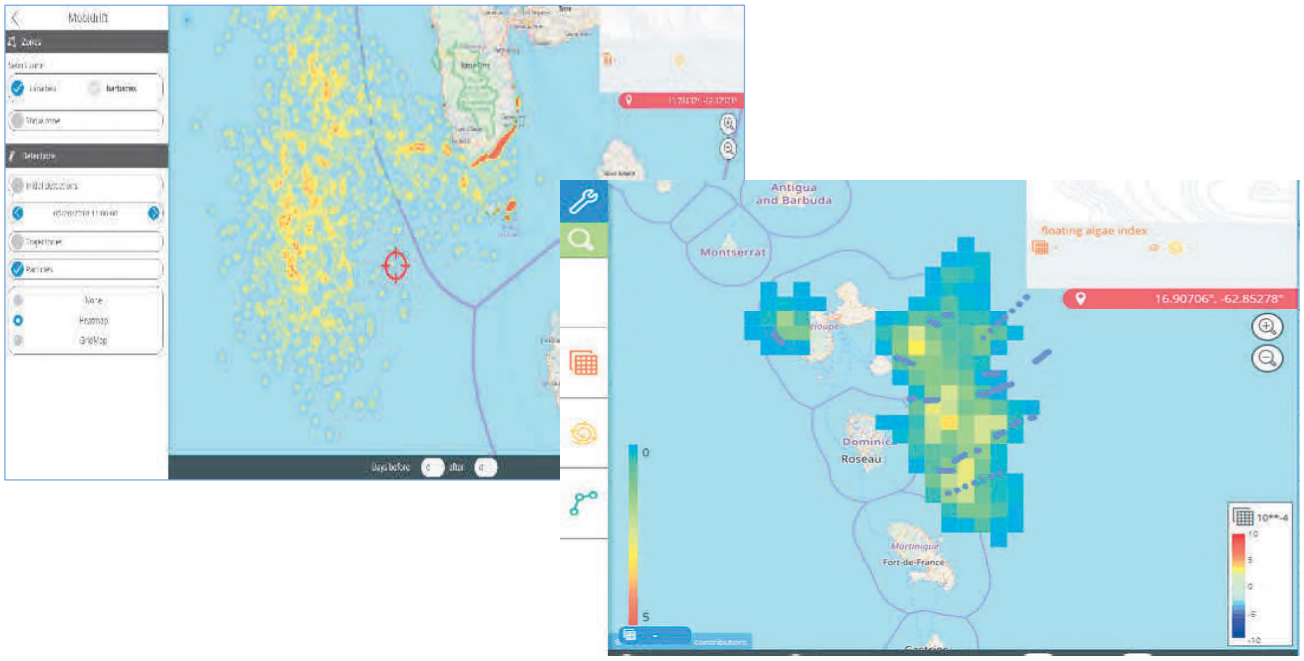
DRIFTER TRACKING

DRIFT SIMULATION RUN



DRIFT SIMULATION DATASET AND DISPLAY

HOTSPOTS PROBABILISTIC IDENTIFICATION



PROJECT LIMITATION & RISKS

- Unfriendly collection of the drifters

  How to mitigate the risk / Maximize the number of return when possible
  - Communication with the local actors (law enforcement, fishermen, NGO's,…)
  - Camouflage
  - Legal sticker for return
  - Monitoring

- Statistical representativity of plastic debris drift model over the years:

  Many parameters to be taken into account:
  - Rainy / Dry season
  - El Nino / El Nina
  - Costal specificities

  How to mitigate the risk / maximize the understanding
  - Limit the number of rivers for the study as a start
  - Maximize the number of drifters
  - Good definition of the release campaign (frequency, numbers, over 2 years)

WHAT COULD BE NEXT

"If you measure, you can manage"

- Set priorities
- Measure impact of implemented policies
- Optimize collection program

Thank you!