

# A MODEL TO SUPPORT SEA TURTLE PROTECTION AT SEA



## USE CASE OVERVIEW



Sea turtles are threatened by human impacts wherever they occur. They spend the majority of their life at sea and their protection requires identification of important oceanic habitats. Unfortunately, limited information exist on the movements of young turtles, from the moment they leave natal beaches until their return as reproductively mature adults. The lack of information about this period ('the lost years') hampers the development of conservation measures focused on juveniles, a critical life-history stage for sea turtle population survival. The Sea Turtle Active Movement Model (STAMM) illuminates the lost years, by simulating the dispersal of hatchlings, and then juveniles, from nesting beaches to the open ocean. The modeled turtles disperse under the combined effect of ocean currents and swimming movements directed towards favorable habitats. These are defined as areas with suitable water temperature and abundant food. All necessary inputs for STAMM simulations (current velocity and direction, water temperature, primary productivity used as a proxy for food abundance) are available from the Copernicus Marine Service.

## BENEFITS FOR USER

- Help fishermen reduce incidental sea turtle catches
- Help managers devise protective measures focused on juveniles - a critical life stage for survival of sea turtle population
- turtles swimming trajectory analysis

• MARINE BIODIVERSITY PROTECTION • TURTLES CONSERVATION • ACTIVE SEA TURTLES TRACKING



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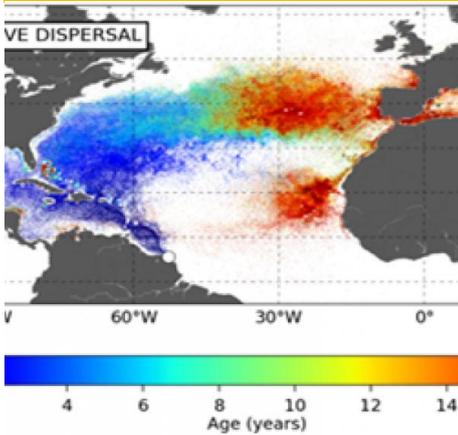


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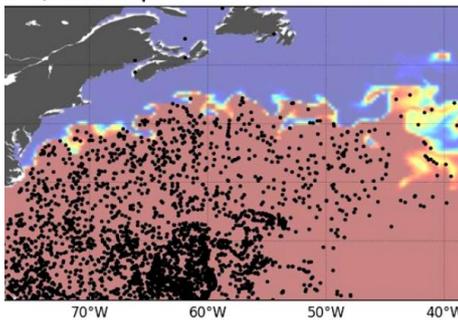
## FACTS AND KEY NUMBERS



According to the International Union for the Conservation of Nature (IUCN), the global populations of all 7 species of sea turtles are considered as vulnerable, endangered or critically endangered. If we just consider leatherbacks (*Dermochelys Coriacea*), the biggest and most emblematic sea turtle species, IUCN experts estimate that the size of its North-West Atlantic sub-population (the largest in the World), has decreased by 60 % between 2010 and 2017. The two Eastern and Western Pacific leatherback sub-populations are critically endangered. Their sizes have decreased by over 95 % during the past three decades.

## CMEMS PRODUCT IN USE

Year 9, Year 2 |



CMEMS products used to monitor turtles trajectories are ocean model data: ocean currents, temperature and primary productivity.

- Product in use 1
- Product in use 2
- Product in use 3
- Product in use 4
- Product in use 5
- Product in use 6

## CMEMS USER



Mercator Ocean International (MOI), based in France, is a non-profit organisation providing oceanographic products that cover the global ocean. CLS is a worldwide company operating satellite systems and developing Value-Added products and services to monitor the Earth. UPWELL is a US-based non-profit organization dedicated to protecting endangered sea turtles by reducing threats at sea.

### Contact

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MARINE  
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### COPERNICUS MARINE SERVICE

Any question, please contact  
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