

Toward an Integrated Observing System for the Southeast Pacific Ocean (SIOOC)

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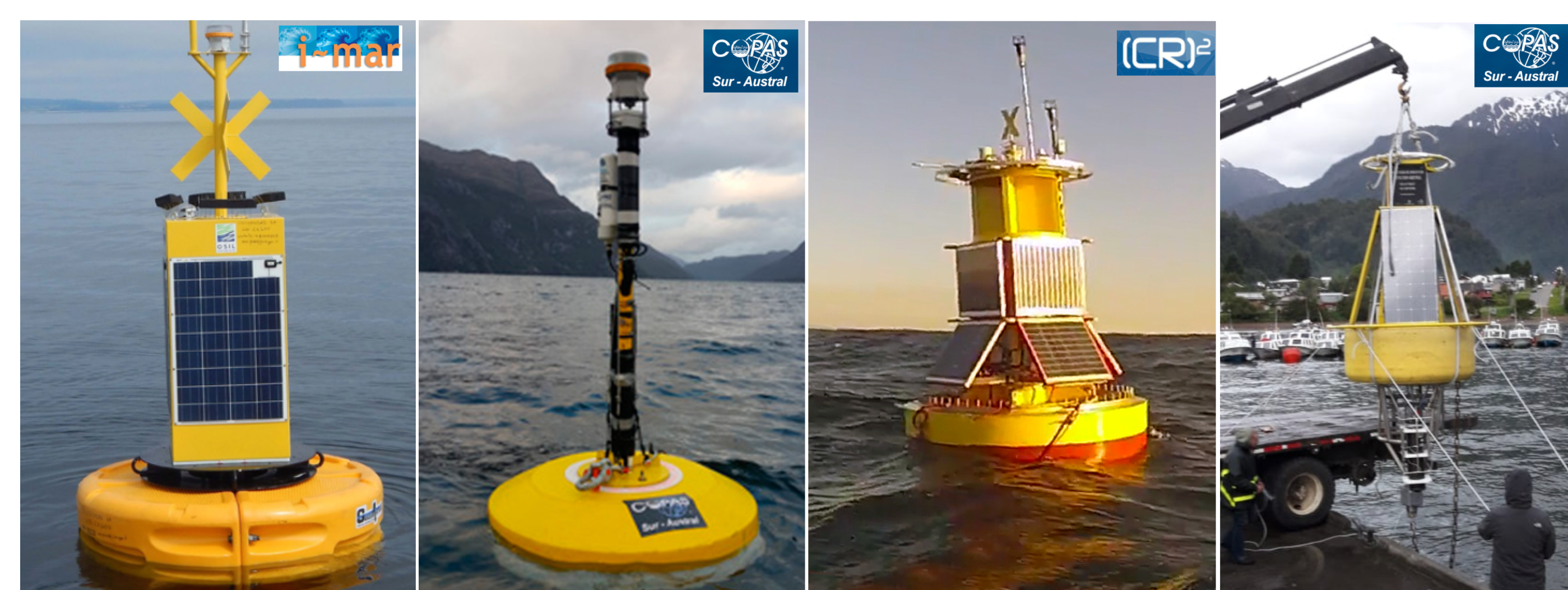
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An urgent need

- Chile is one of the most vulnerable countries to Climate Change. Its extensive coastline of about 84,000 km (including islands and fjords), makes Chile economically, culturally and socially dependent on the ocean and its resources
- Yet, there is a lack of long-term and real-time observations for Climate Change studies and to rapidly respond to fast changes in the ocean and atmosphere
- In order to adapt to these changes, information is also needed to understand vulnerabilities and risks to which coastal populations and resources are exposed
- This initiative aims to establish an observing system for the southeast Pacific Ocean to provide information about current and future oceanic and atmospheric conditions specifically along the Chilean coast

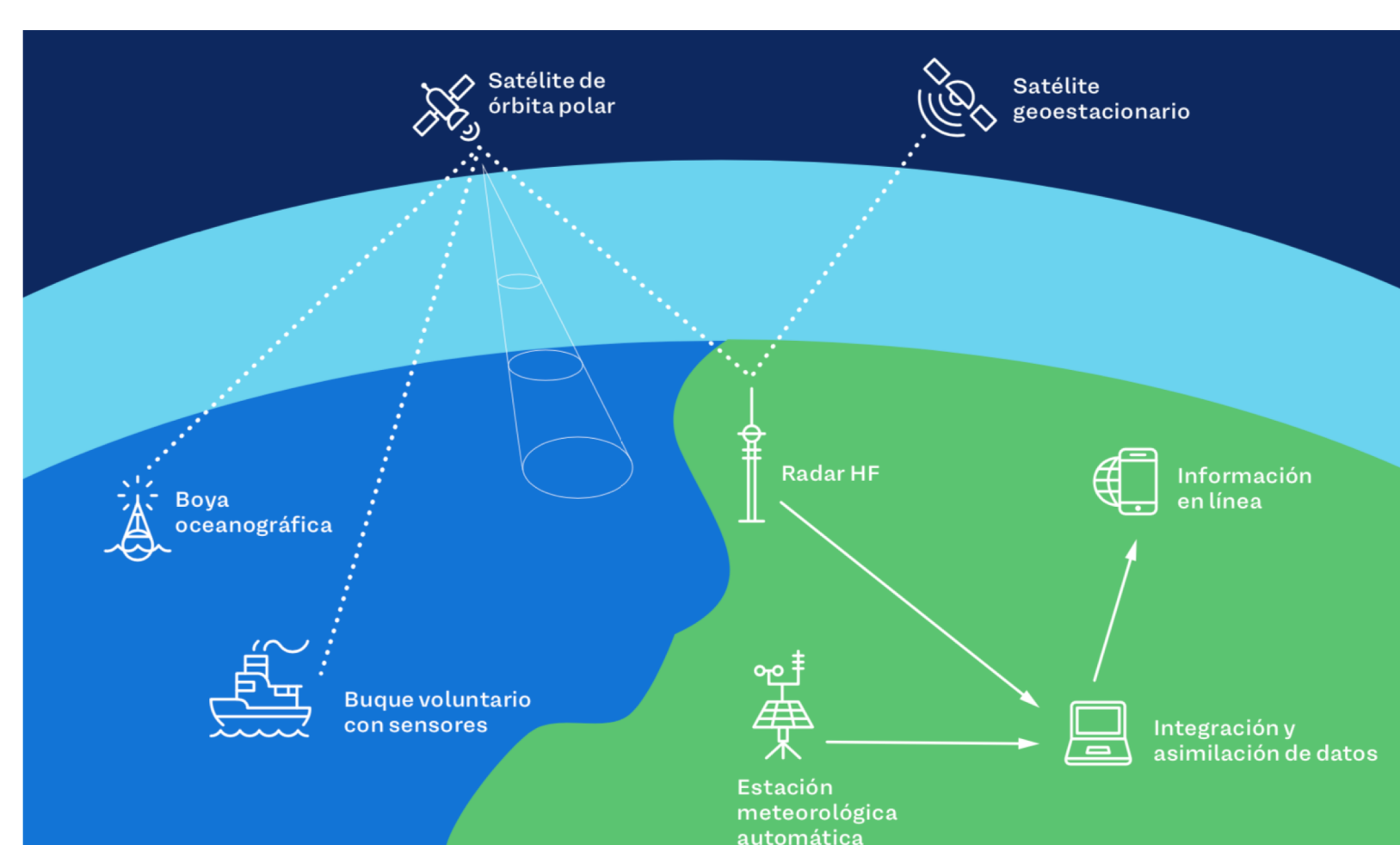
What is an ocean observing system?

It is an array of oceanographic and meteorological instruments located along the coast to provide information about ocean and atmosphere variability. In these arrays a wide range of variables can be measure for environmental monitoring (e.g., air and water temperature, salinity, oxygen, currents, waves, sea level, winds, atmospheric pressure, radiation, CO₂, pH, nutrients, plankton, etc.)



Examples of ongoing systems deployed off the Chilean coast

What does it mean integrated?



To have connectivity among all the instrumentation available (*in situ* and satellite) with real-time data transmission to data centers.

Applications and needs

- Climate Change monitoring
- Development of early warning systems for coastal hazards such as storm surges, tsunamis, harmful algal blooms, hypoxia, eutrophication, contaminants, etc.
- Monitoring of marine protected areas (MPAs) for conservation management
- Development and improvement of ocean, biogeochemical and atmospheric regional and global models for prediction
- To achieve international compromises
- Operational purposes (weather, port and aquaculture activities)
- To elaborate public policies based on environmental evidences
- To reduce environmental conflicts in zones of multiple uses

Time for action

- Chile needs a national policy allowing funds to be secured and human resources to be warranted via technical transfer and training of future generation of ocean observers
- Preliminary estimations suggest a time frame of 6-8 years to implement the SIOOC, with an initial budget of USD \$65.000.000
- The future of the Southeast Pacific and the adaptation of human populations in Chile, as well as others countries, will strongly depend on decision we make today

Ongoing efforts

Chilean marine science is taking the challenge of fusing individual efforts (see below) and improving substantially the observation capability of the country.



Acknowledgments: We thanks to all the colleagues that answer the survey about the SIOOC. Special thanks to the near 50 participants and helpers of the Expert Workshop carried on June 2019 in Concepción, Chile. We appreciate the resources provided for the workshop by the University of Concepción, COPAS Sur-Austral and the Center for Climate and Resilience Research.

Comprehensive state-of-the art equipment (oceanic, atmospheric and computational)

Periodic maintenance and instruments' calibration facilities for good quality data

Real-time transmission and database management systems

Multidisciplinary high quality human resources to implement, analyzed and maintain the systems