AUSTRAL SUMMER INSTITUTE XIV (ASI XIV)

Department of Oceanography & COPAS Sur-Austral

Coastal and Open Ocean Studies Through Multiple Approaches

University of Concepcion, Chile

January 2014

Course description

Multi-disciplinary satellite oceanography: platforms, data and applications.

6-10 January 2014.

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The course is an introduction to our present capabilities in making ocean measurements from space. The course will cover the basics of satellite platforms, orbits, and the very basic physics involved and challenges presented. We then talk about the primary types of measurements possible and some of the main biological and physical ocean data products derived from these. We discuss the instruments and agencies involved, aspects of the quality, resolutions, and limitations of the data, some of the applications of the data, and access to some of the regional and global data sets served to the international community. While presenting an overview of the instruments and measurement techniques, the emphasis will be on providing students the background necessary to think about ocean applications, do oceanography and read the literature (or listen to talks) critically, rather than details of the physics and engineering. We finish with a brief overview of satellite oceanography and data types that we did not talk about, and some present areas of active research in satellite oceanography.

The objectives of the course are to provide students with a broad introduction to the multi-disciplinary capabilities of Earth-observation satellite data for applications in oceanography.

CONTENTS

- Introduction: Why satellites? Some history, some politics and some accounting.
- Satellites, orbits, some physics and geometry, technical terms, platforms and instruments.
- Sea surface temperature: measurements in the infrared and microwave.
- Ocean color: multispectral measurements and diverse biogeochemical products.
- Sea surface height: altimeters and physical oceanography.
- Ocean wind vectors: scatterometers.
- Salinity: our newest capability.
- Present research thrusts and what we didn't talk about: other measurements, other instruments, other applications.