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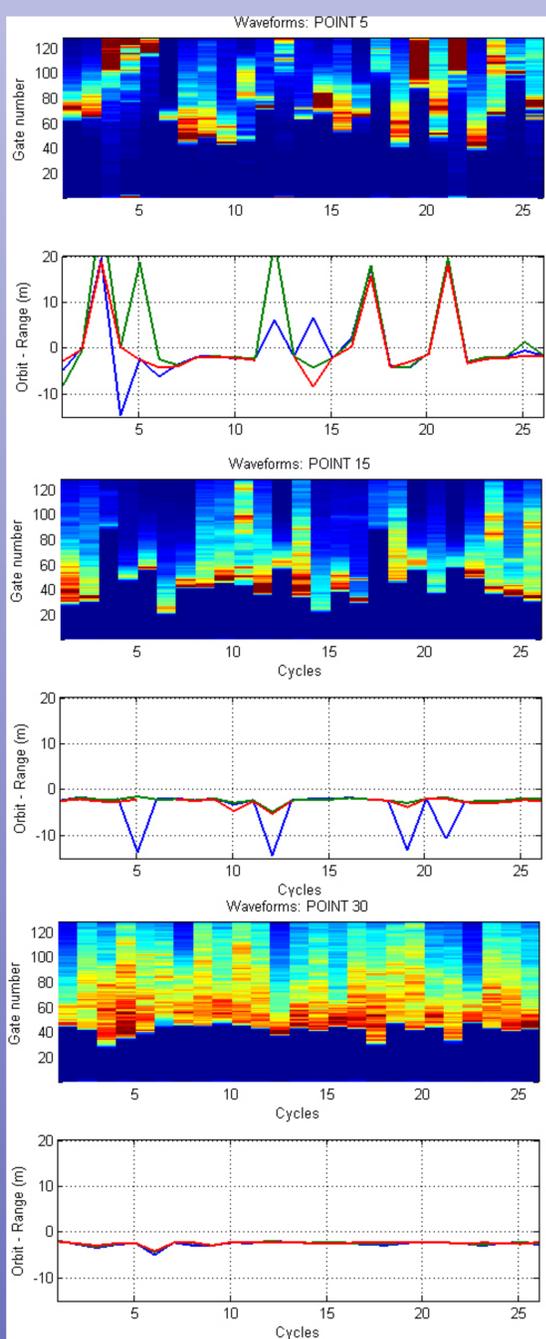
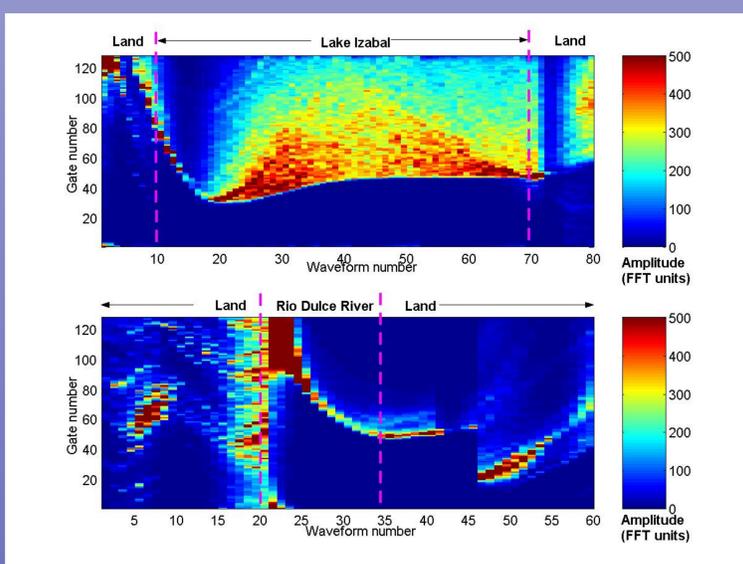
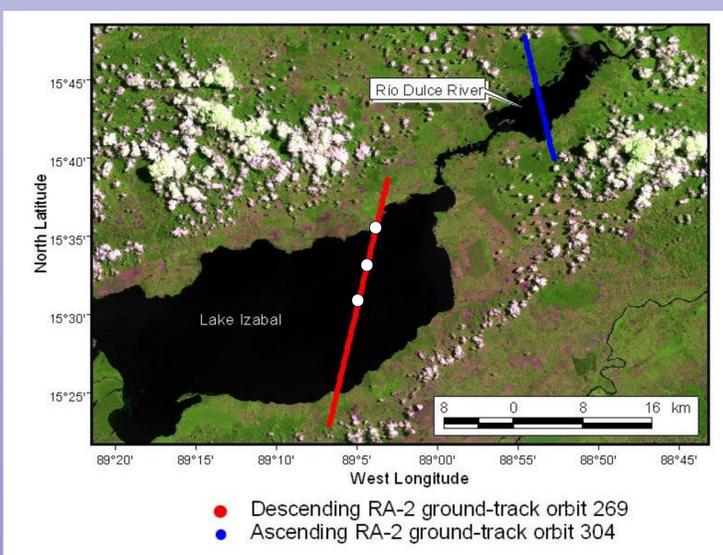
Motivations

Radar altimeters made measurements of surface water levels possible from space. The technique was originally designed for use in the open sea, but has also been applied successfully to inland water bodies. Now, with more interest in the part of the sea that is close to the shore, many in the satellite altimetry community are working on the development of specialized re-tracking algorithms and improved corrections in that domain. It is important to recognize that the previous technical challenges are common to satellite altimetry over any water body in the area where the water meets the land. Thus, "Coastal Altimetry" represents a concept that could help the hydrological and marine components of the satellite altimetry community to work together, with the common objective of facing the challenging issues existing at land/water interface.

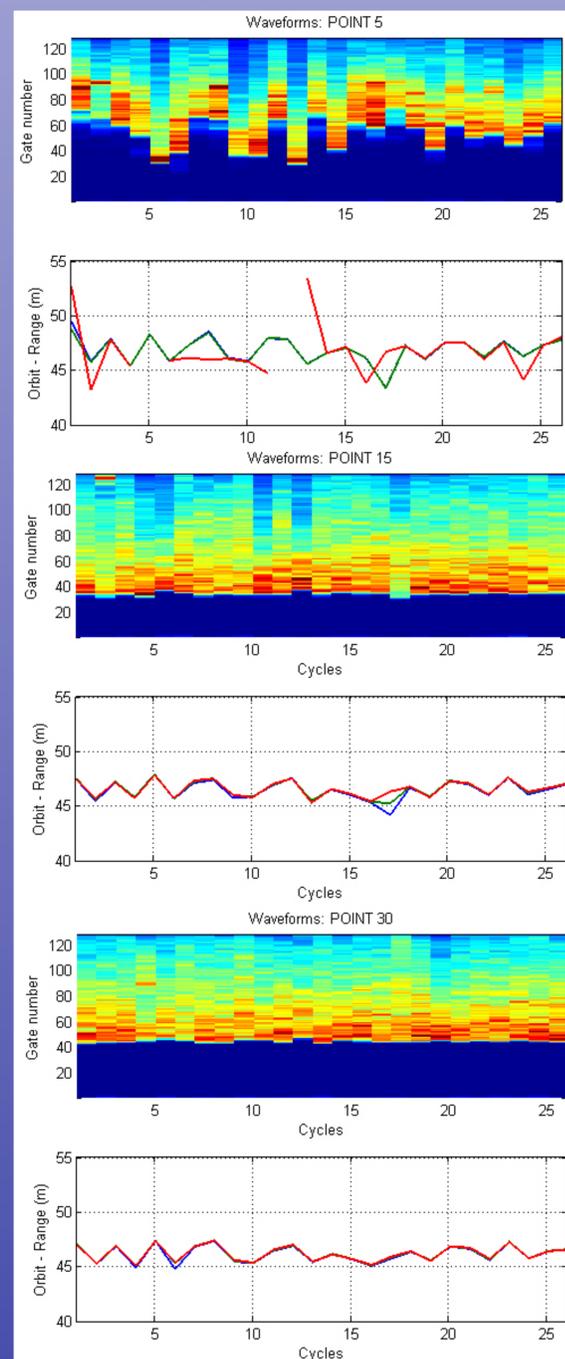
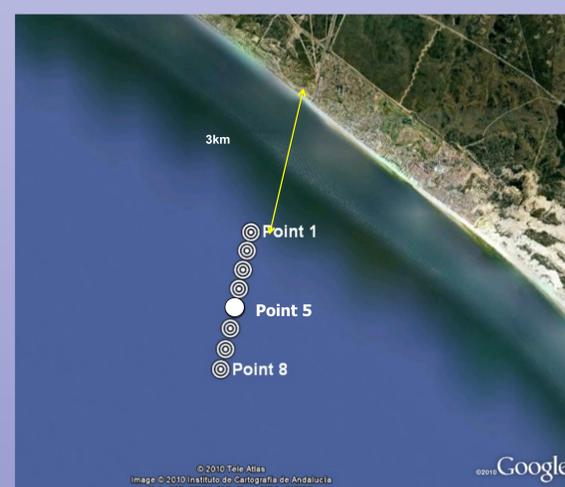
Methodology

The Envisat RA-2 mission provides a 35-day revisit time, with a maximum of 300 m resolution along track. It has collected altimeter data over the whole globe since 2002. Within the COASTALT project, this historic archive of observations is accessible, with the addition of re-trackers optimized for non-open ocean targets. Two case-studies of inland and marine sites are selected. Envisat tracks are processed near land using the COASTALT processor. Examples of waveforms and re-tracked time series (SGDR, Brown and ICE 2) are reported at three ground points in order to show the re-tracking performances moving from land to offshore. Orbit minus range is assumed a good indicator of anomalies due to re-tracking malfunctioning.

Lake Izabal



Gulf of Cádiz



Summary

Lake Izabal is the selected inland site. This lake is the largest one in Guatemala. Although designed for coastal ocean, the COASTALT processor is capable of generating a customized product for inland waters. Gulf of Cadiz is the selected marine site. This is a wide embayment of the Atlantic Ocean along the southwestern Iberian Peninsula. Both Envisat ground tracks are descending. The land to water transition is clearly seen in the first waveforms. Then pure Brown-like waveforms are observed moving offshore. There is clear evidence of differences in re-tracking performances between the two sites. We need more case-studies to identify if some patterns are recurrent and which specific morphological and dynamic characteristics are causing them. The orbit minus range time series extracted at three points along track shows that in the case of the inland site all re-trackers start producing reasonable ranges at about 4 km from land. This is not the case of the marine site where re-trackers take more time to produce reasonable ranges.

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