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Floodplain mapping from remote sensing techniques: radar altimetry and medium resolution Modis sensor.

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A method of wetland mapping and flood event monitoring was developed on the basis of a satellite multi-sensor data combination. The method has been developed and tested on the Diamantina River, which is located in Central Australia and is the main tributary of the Lake Eyre. This river basin, located in a very arid zone, is affected every three-four years by flood due to extreme precipitation in the North East of Queensland. The Diamantina river is a nearly ungauged basin. A big flood which crossed the Diamantina river basin from upstream to the lake Eyre hundreds of kilometres downstream in a period of less than two months occurred in 2004. The Goyder lagoon, located in the middle part of the river, near the city of Birdsville, was chosen as target to assess the potential of the method. This includes surface Reflectance measurements from the MODIS Terra instrument to detect water on the area of study and monitor the spread of aquatic vegetation on a daily basis. A Topography map of the Goyder Lagoon was obtained from the Laser altimetry data on the Icesat satellite. To compute water level variations on continental the Lagoon, we used the radar altimetry on Topex / Poseidon and Envisat. Based on these different techniques we have determined the extent of water within the Goyder lagoon, as well as its volume of water evolution, which is key parameter in the understanding of hydrological regime of big rivers, in particular in regions affected by large flood event. In ungauged basin, this type of information may be used as input of hydrodynamical model.