2010: A Milestone Year for Rapid Mapping and Water Body Monitoring Activities within the Dragon Wetland Flood Project

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After two years and half years, the Wetland Flood DRAGON project reaches a good cruise speed in all its thematic branches, flood rapid mapping, flood monitoring, water quality monitoring, water height retrieval from space, wetland mapping, and in epidemiology confirming and making higher the obtained results at first stages. Now it is eleven years of water extent monitoring, a corner stone of the project, that has been realized over Poyang lake, and nine over Dongting lake. Over Poyang lake this has been done on a weekly basis exploiting middle resolution ENVISAT ASAR times series, completed by Modis ones. In addition relatively large amount of Beijing 1 data, very valuable inputs in terms of validation and allowing also to complete or to increase the temporal coverage, have been integrated to the Poyang lake database. At lake's scale, the obtained results allowed the characterization of lakes behaviours and identification of lakes sub divisions behaviours. At a regional scale, the two major resource of water of China, present very similar behaviour, driest 2001 summer, largest floods in 2002 and 2010 plus a suspicious summer 2006 and flood in February 2005, this astonishing phenomena occurred twice again but with lower amplitudes in February 2008 and 2009. At regional scale, impressive correlation between rainfall at Yangtze watershed level and lakes' water extents is highlighted.

In term of rapid mapping, the 2010 would be considered as a milestone. Since the end of June, major lakes such as Donting and Poyang, and major Chinese rivers overflow all around the country. Awarding this situation, a surveillance policy was set up with the European Space Agency support to insure a monitoring of Yangtze middle reaches. By the way, from July to September 2010, ENVISAT data were processed in a NRT context, being downloaded thanks to the Rolling archive capacities only a few hours after their acquisitions. After water extraction phase a brief situation report with a space map was sent to authorities as well as to project partners. Even if these NRT actions have focused mostly Poyang and Dongting lakes, some were also carried over the Songhua River in the Jilin province.

Water height monitoring from space was realized near all altimetric resources have been carried out over Poyang Lake, Dongting lake and also over some spots on the Yangzte river. The coherencies between spaceborne water height and measures at gauge stations are very high confirming, even during the period of low level of water the great potential of altimetry methods for water height monitoring. Poyang monitoring was realized over all the period of data coverage since its launch to the orbit modification in fall 2010. For Dongting lake, monitoring is based both on the RA data but also on the recently launched Jason 2 data since middle mid 2008,. Finally it is the first exploitation of and this, reaching more than over a period twice more than previous studies realized over Chinese lakes.

Thanks to close collaboration between team partners, a map of vegetation covering the entire Poyang depression has been set up for the first time; based on the exploitation of Beijing 1 time series and field validation control. This map has also a dynamic aspect, presenting growth stages such as for plants community dominated by Carex. The strong relationship between plants community's type and period of inundation has also been pointed out.

For the downstream epidemiological application, major advances have been done. Thanks to the combination of information on time of inundation and vegetation repartition, location of most favourable spots for the development of the snail vector of the schsitomiasis disease was characterized. Plus, exploiting VHR ALOS imagery, a map of settlements was set up over all lake's region, as well as specific maps of human activities related to water, such as fishing, were generated. Two new risk's indices were produced, a first one enhancing the most risky areas for buffalos grazing activities and the second ones, the most vulnerable villages around the lakes.