Water level in Poyang and Dongting lakes using ENVISAT and JASON2 altimeters. Validation against in situ data

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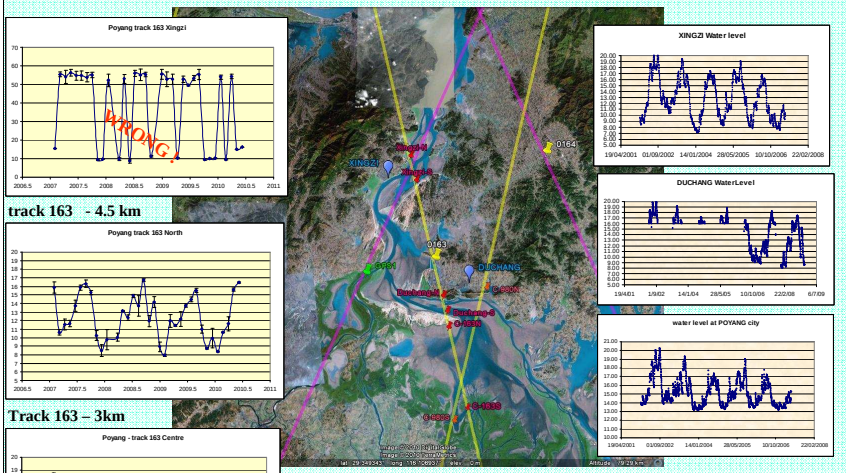
Lake Poyang is located in a flat depression surrounded by mountains and exposed to seasonal flooding with water level increase of several meters. Surface water extent is ranging from 1000 to 5000 km2 from dry to wet season. The lake Poyang basin is a complex system of rivers and sub-basins, mean altitud ebeing very low, about 15 m at 500 km from the sea. Due to the water discharge of the main rivers feeding the lake Poyang, from July to September, the major flood of Poyang lake occurs in Summer, with however inter-annual variability.

ENVISAT RA2 altimeter data

In situ gauge measurements



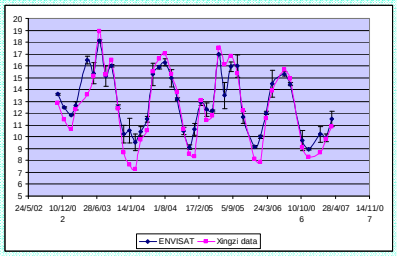
track 163 - 4.5 km

Track 163 – 3km

Track 163 - 16 km

Track 980 - 25 km (28.5 days after track 163)

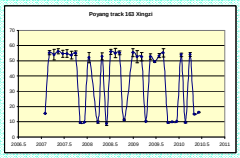
Xingzi gauge is the most représentative of Poyang level and the track in front of Duchang reveales a good agreement with these levels.

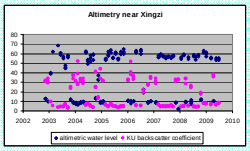


Altimeter data in front of Xingzi analysis : Why so bad ??

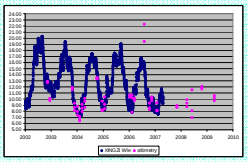
- Wrong water levels (50 to 60 meters) , but
- ICE1 operate properly
- ICE1 works better than ICE2

are correlated with too low baskscatter coefficients.





Altimetry measurements : All points



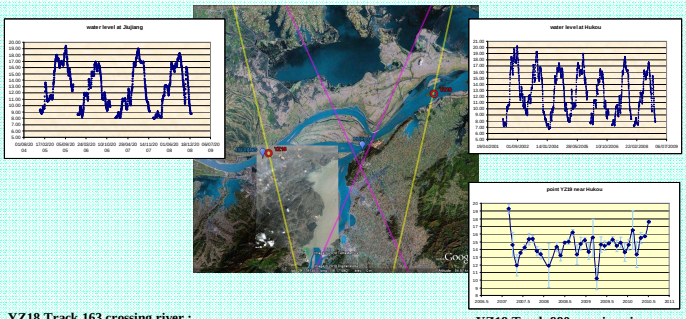
« good » altimetry measurements/in situ data

These low σ values occurs during high water, is it rain ?

	Cycle 77 (wrong)	Cycle 78 (good)
Rain flag	1	1
K_rai_atten	undef	undef
Ku_ice1_retrk_qua_flag	0	0

- anomaly due to muddy waters ???

YangZe river levels at Poyang outlet



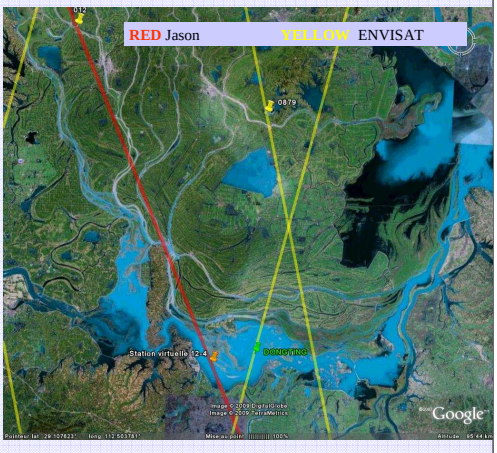
YZ18 Track 163 crossing river : 1.5 km – no solution yet

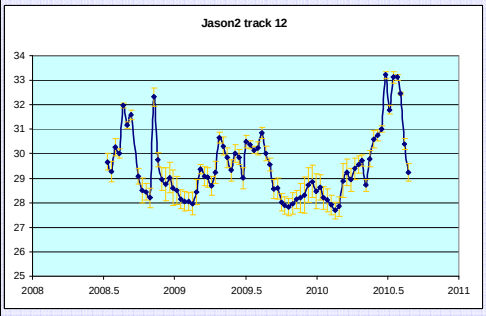
YZ19 Track 980 crossing river : 3 km

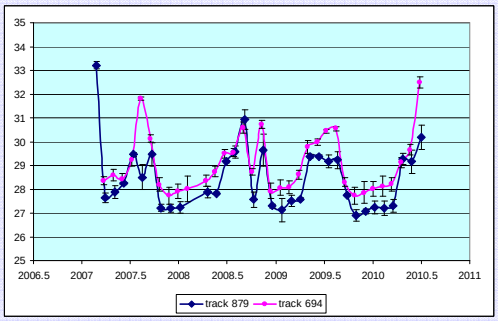
Dongting lake

Lake Dongting is a flood basin of the Yang Ze river. In the July-September period, flood water from the river flows into the lake, enlarging it greatly. The lake's area, which normally is 2,820 km², may increase to 20,000 km².

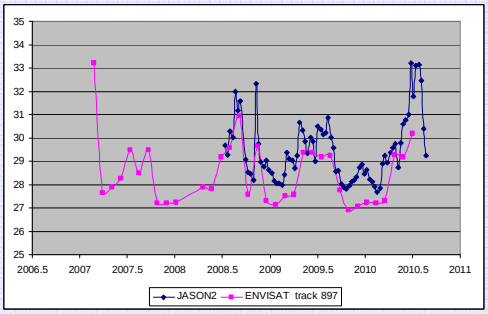
We have processed ENVISAT data over 2007 – today time span and JASON2 GDR from the begining of the mission.







Two tracks are available for ENVISAT (track 879 is 6.5 days after track 694)



In situ data are needed to check accuracy of the altimetric determination.