

SARAL/AltiKa altimetry over rivers

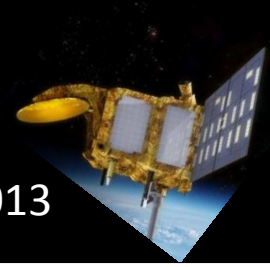
S. Calmant (LEGOS, France)

J. Santos da Silva (UEA, Brazil)

D. Medeiros Moreira (CPRM, Brazil)

D. Blumstein (LEGOS, France)

F. Seyler (Espace, French Guyana)



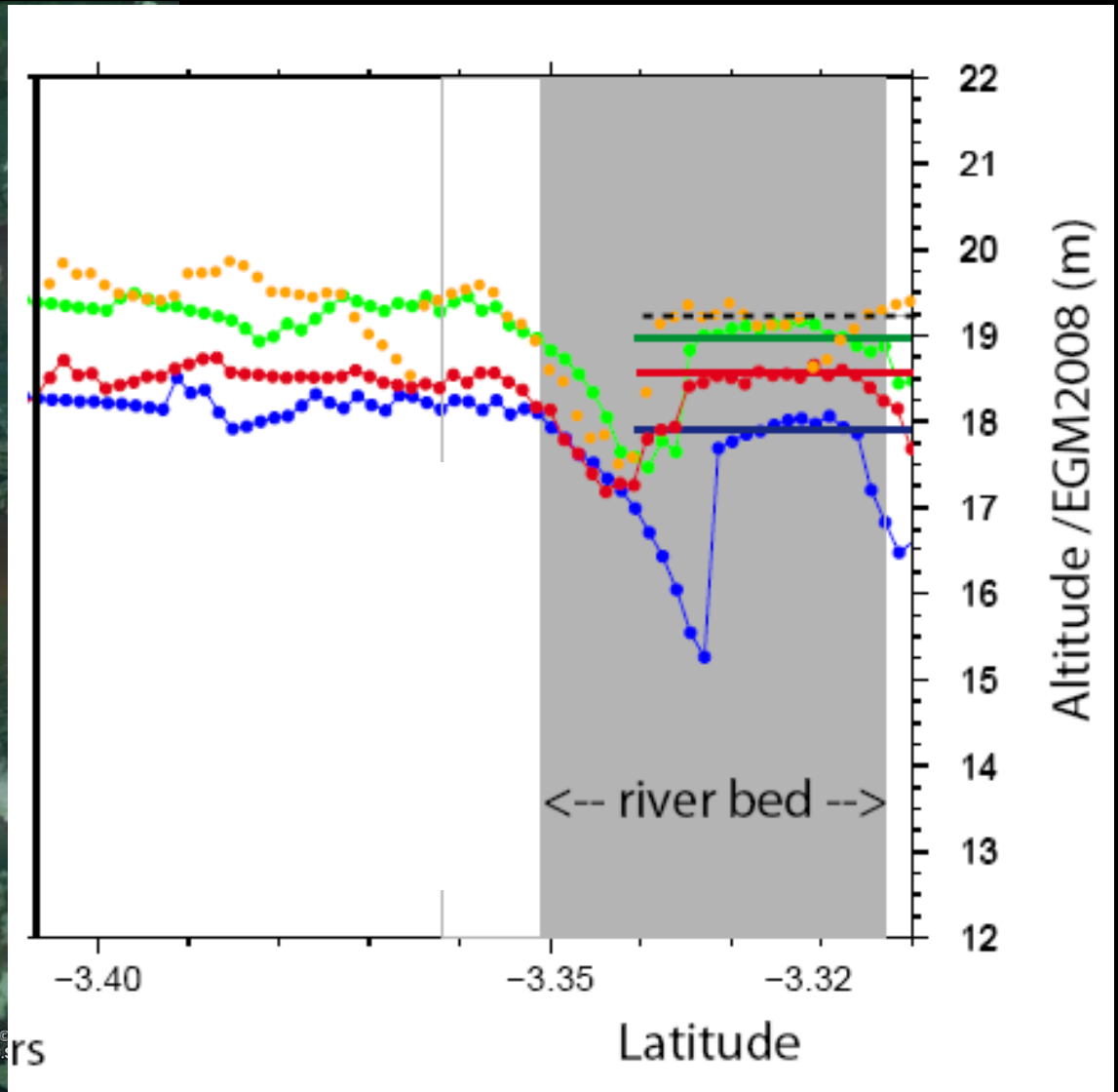
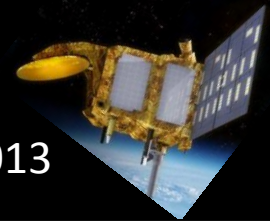
Key points :

over rivers, the major source of errors are:

- the range determination
(retracking algo)
- the point actually tracked
(nadir or not nadir)
- the identification of the « right »
measurement

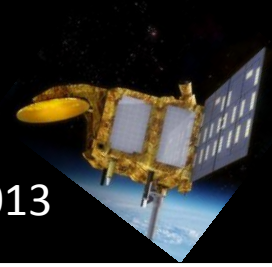
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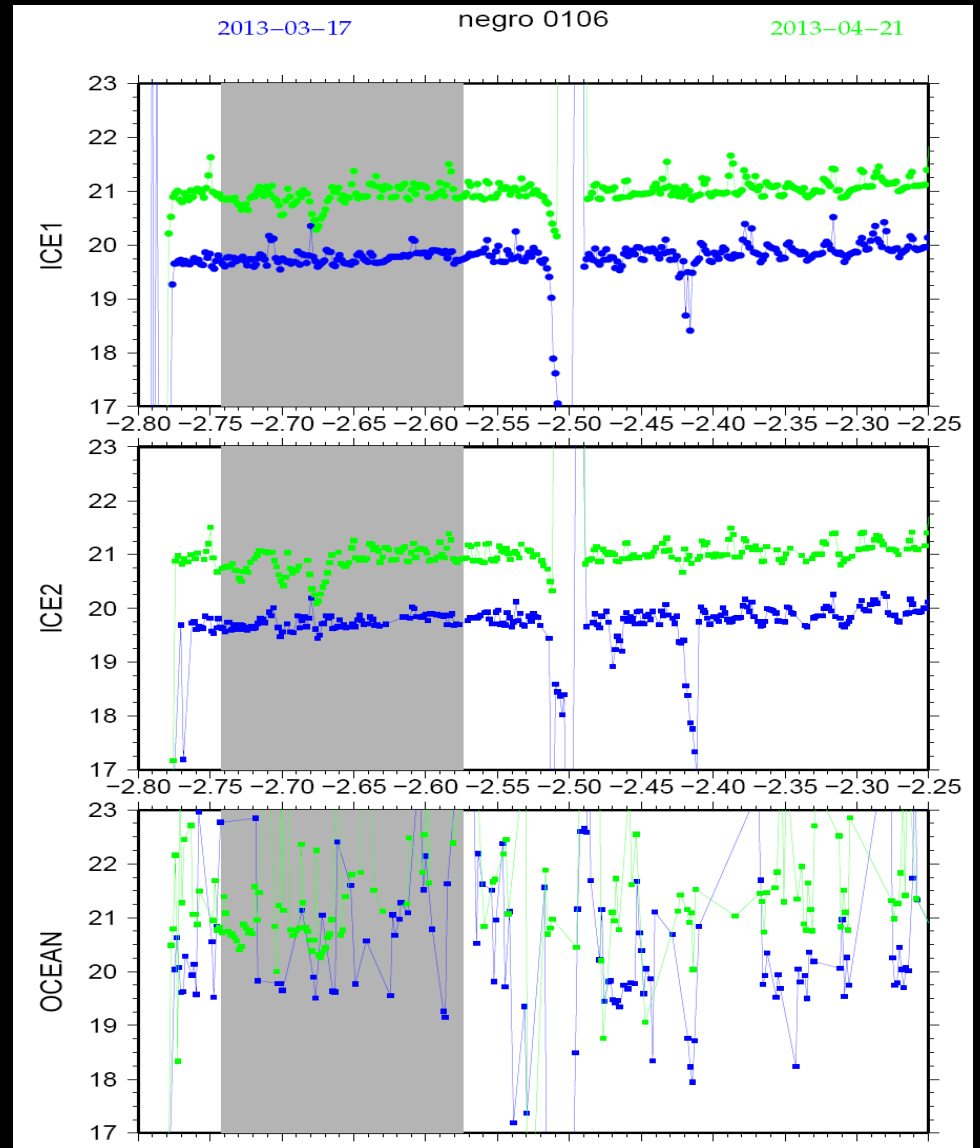
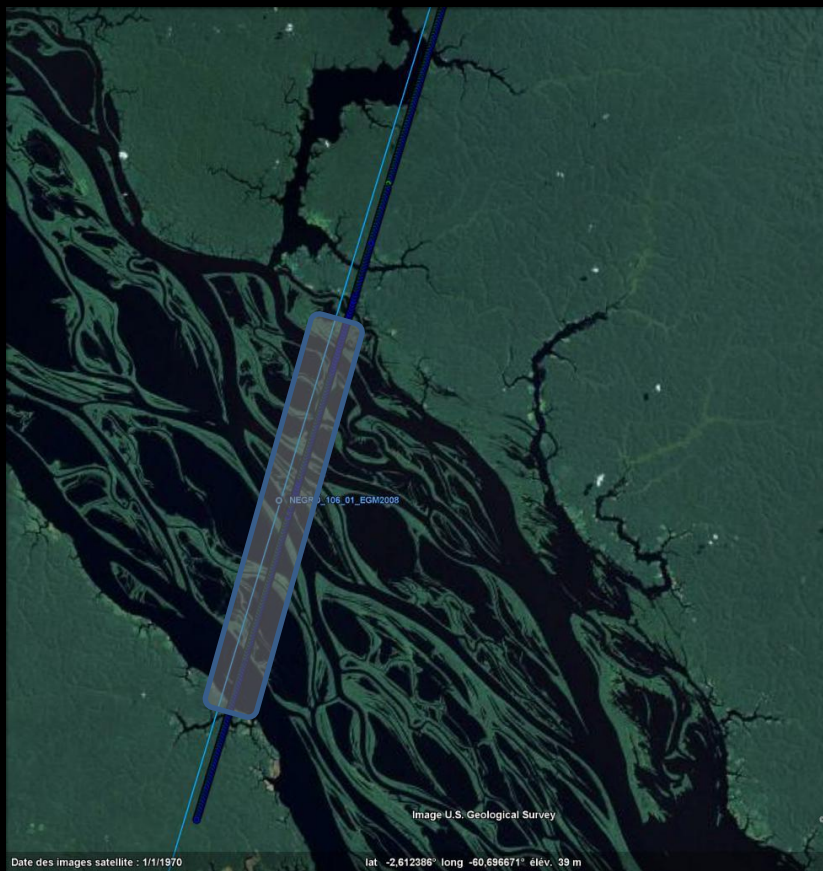
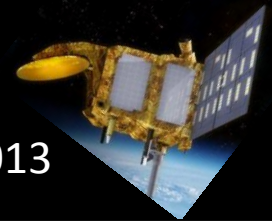
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1- The question of retracking algo

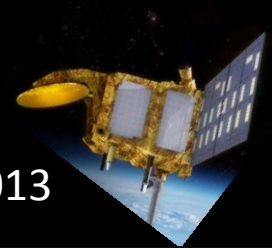
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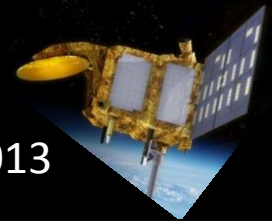
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2- Targets

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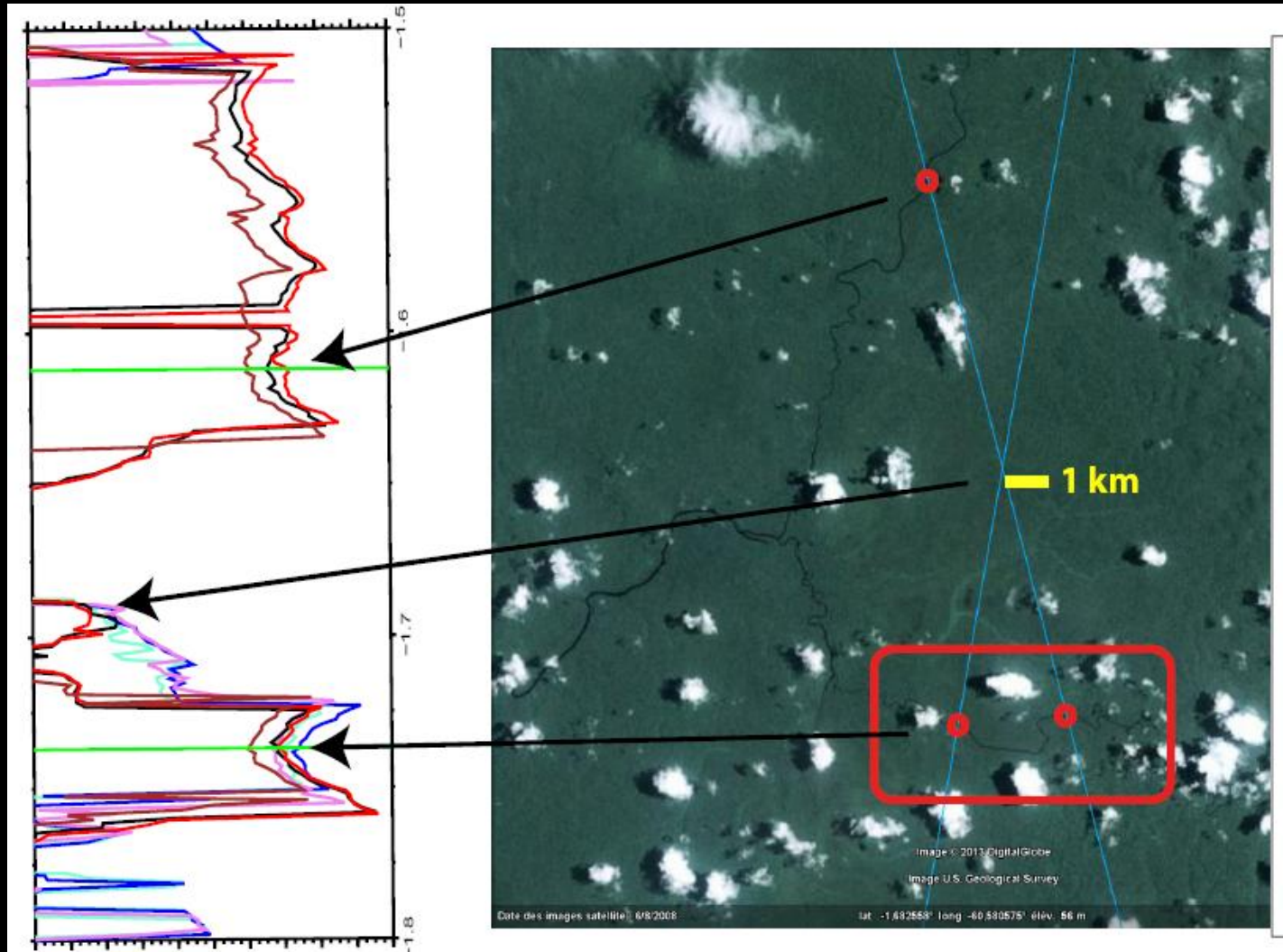
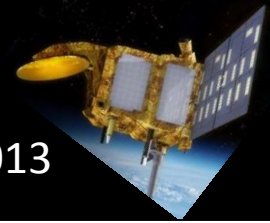


2.1- Narrow reaches & forest



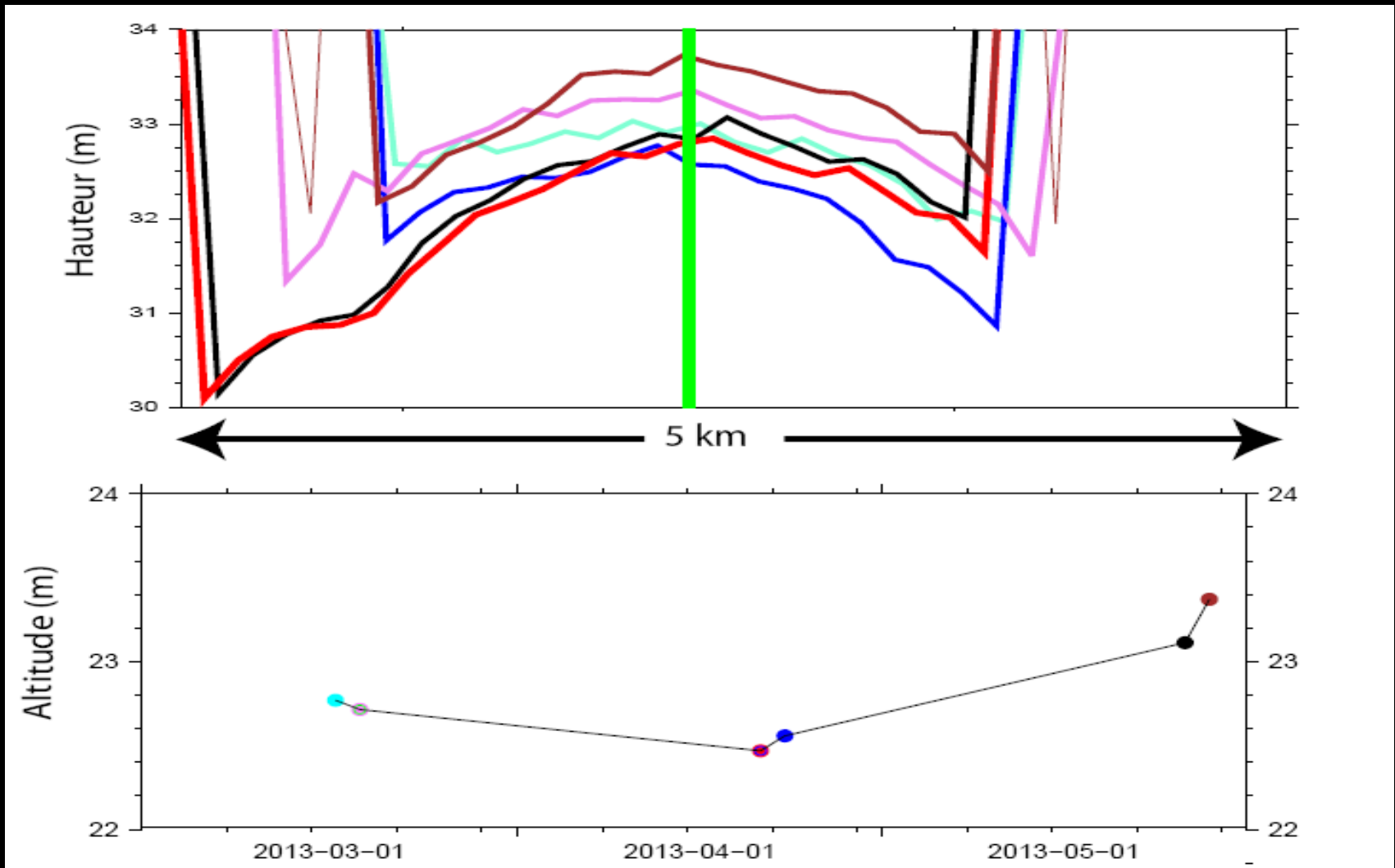
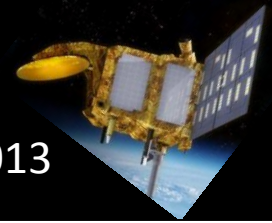
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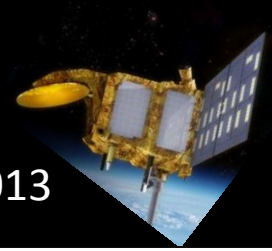
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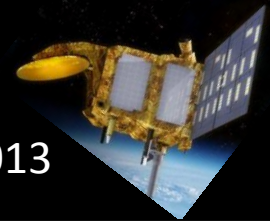


2.2- Wide reaches

(> 2km)

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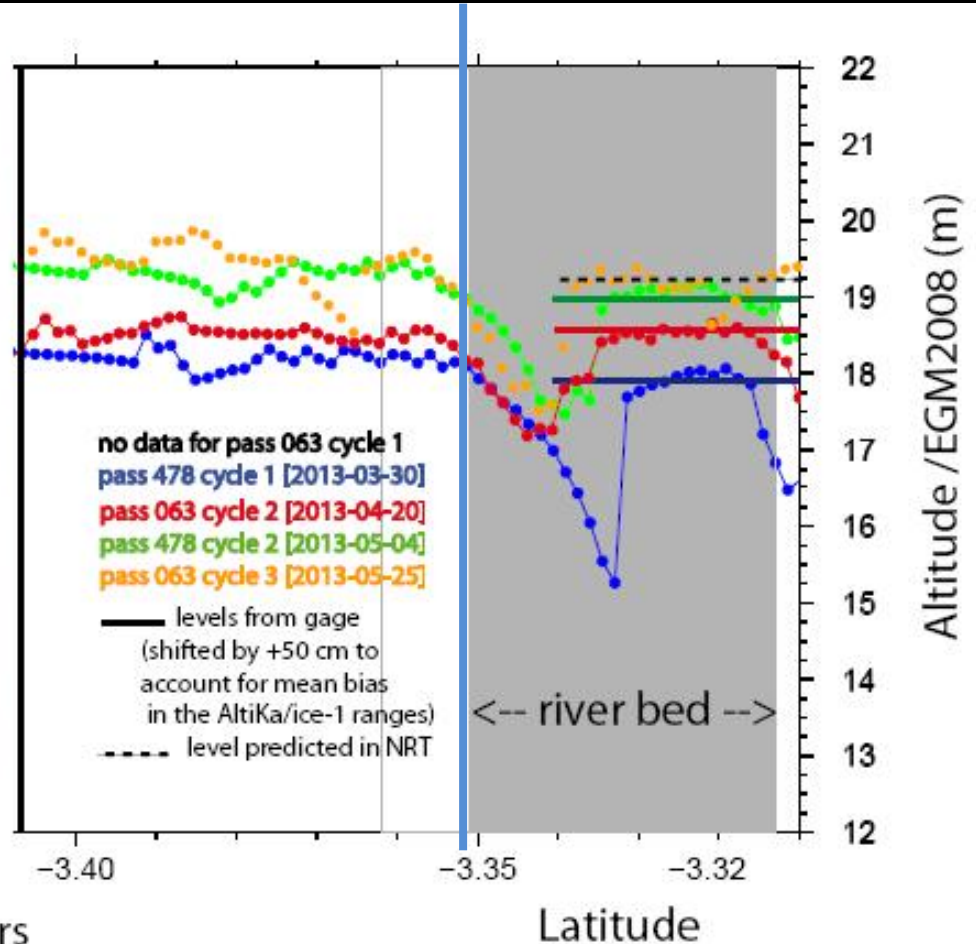
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Forest river

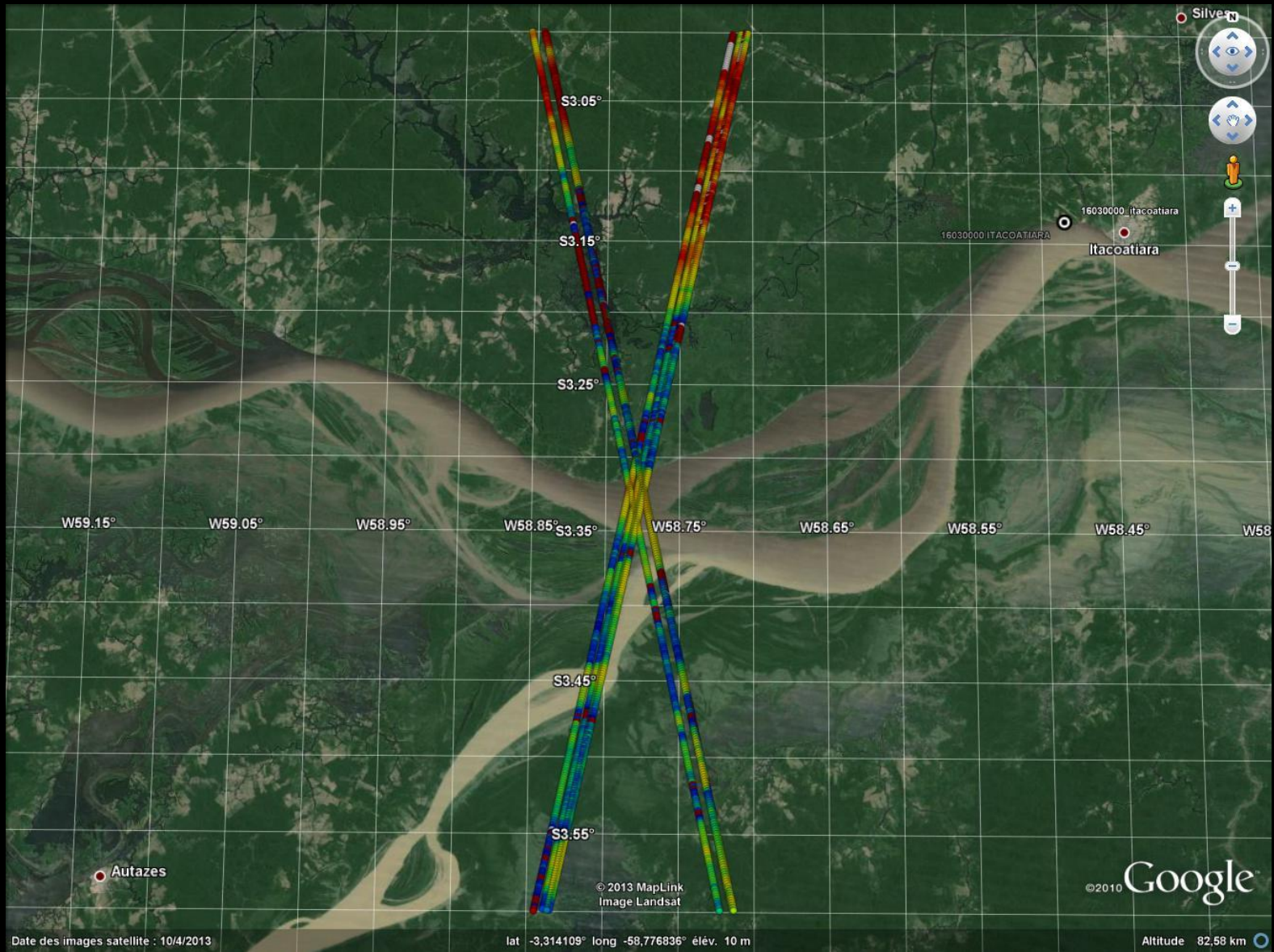
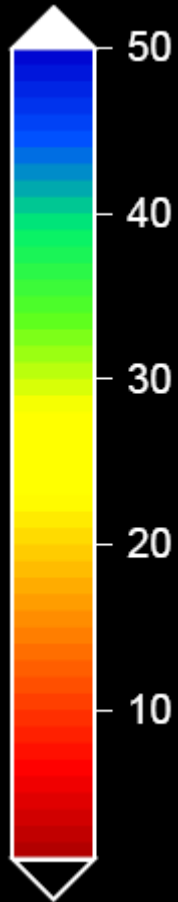
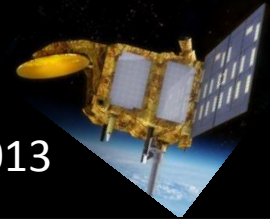


Crossing of AltiKa passes 063 and 478 at the meeting of the Amazon and Madeira Rivers



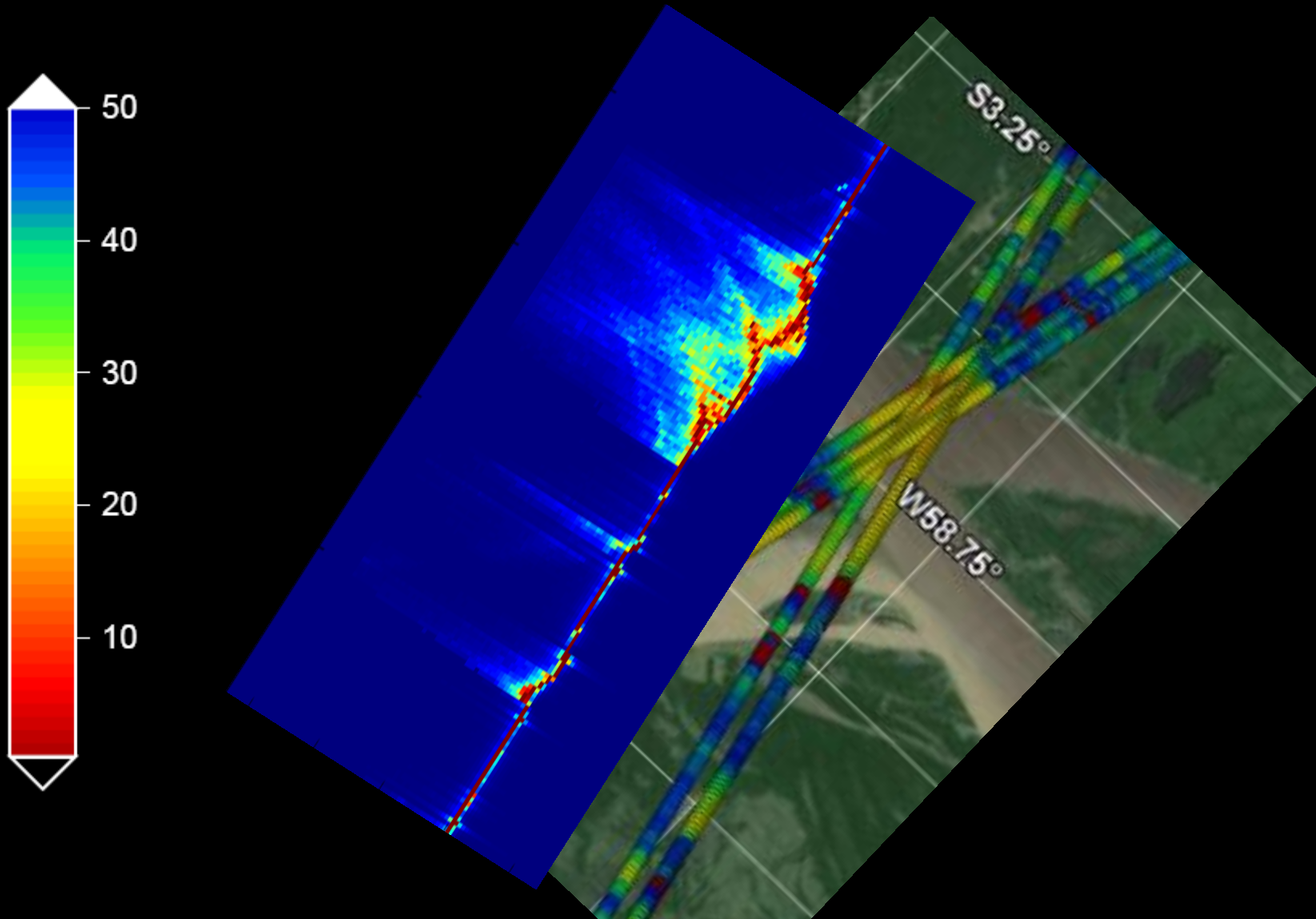
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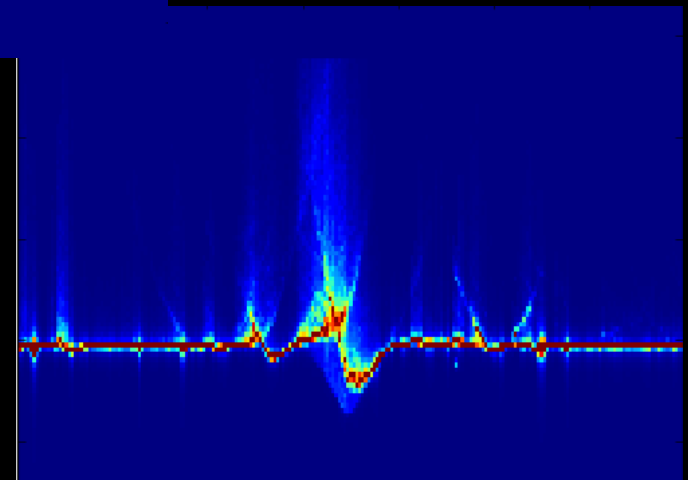
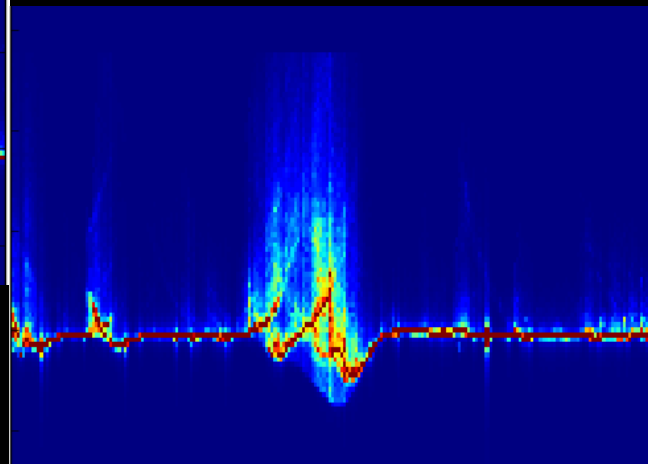
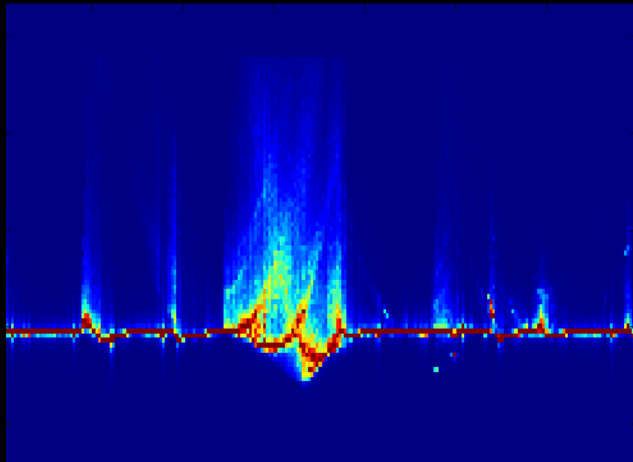
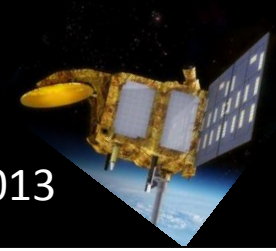
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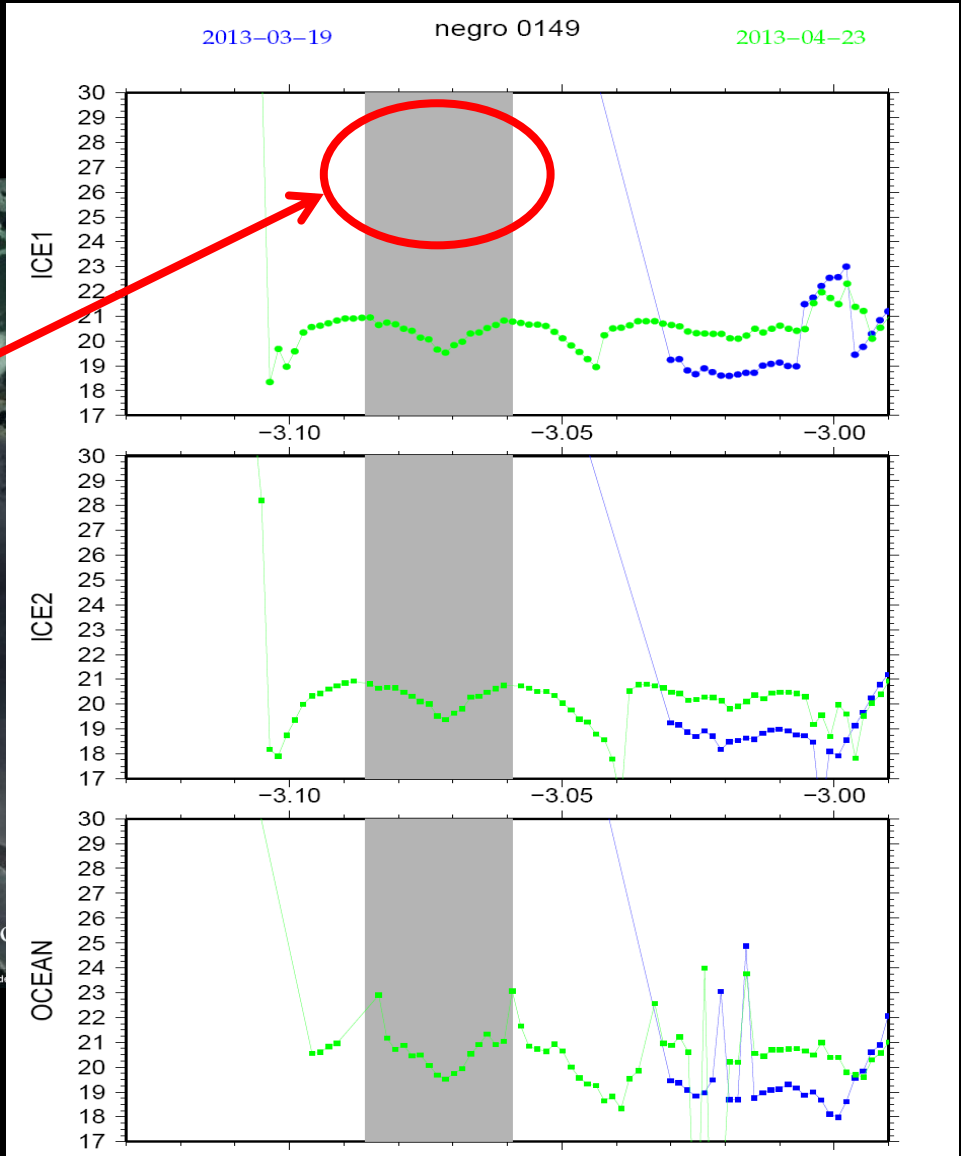
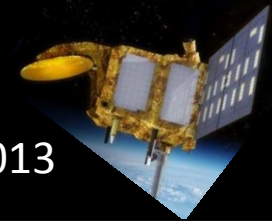
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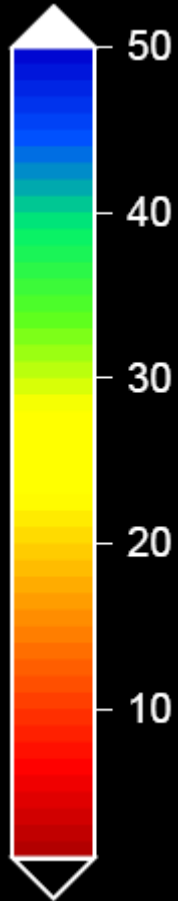
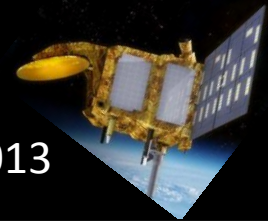
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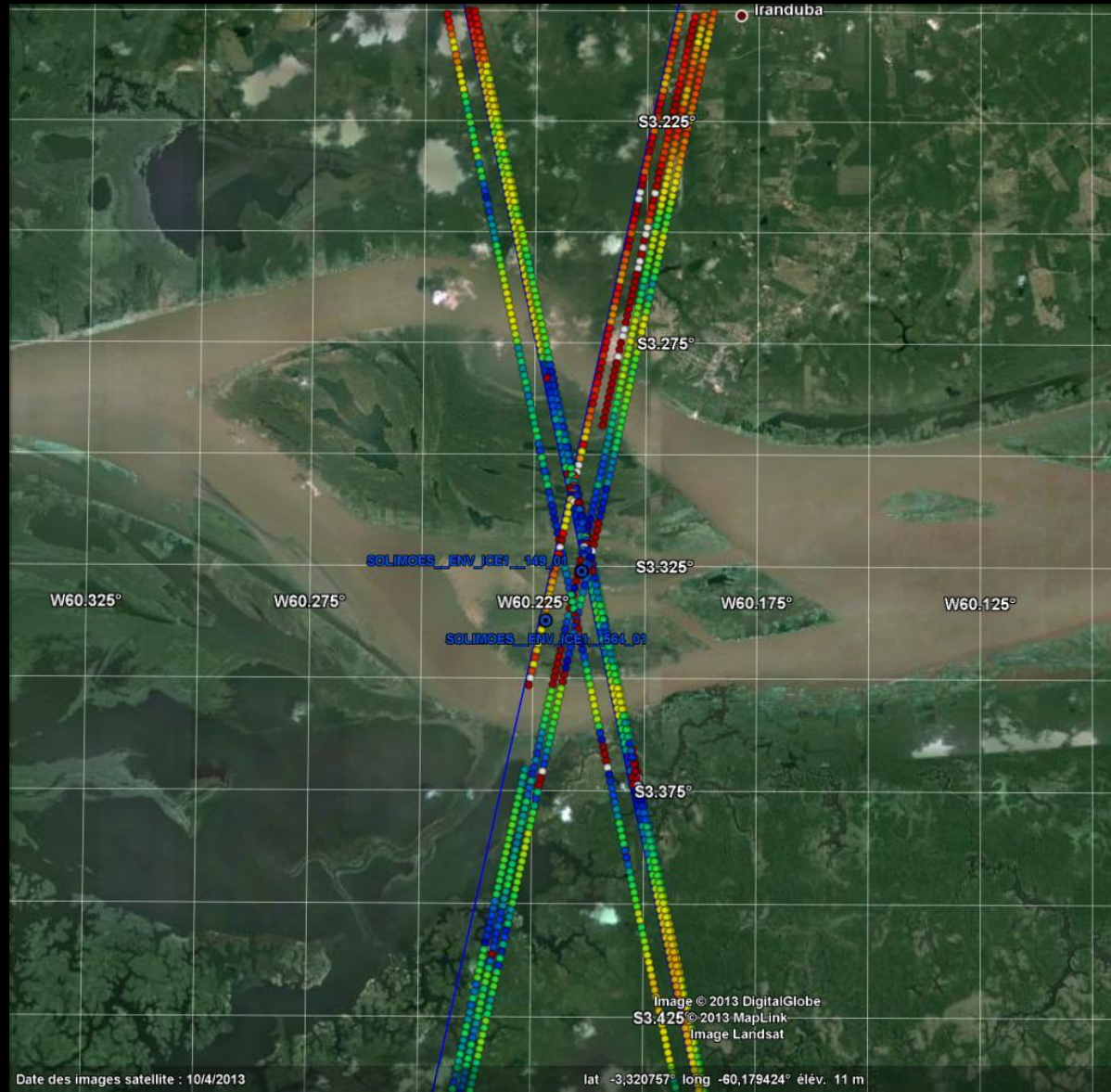
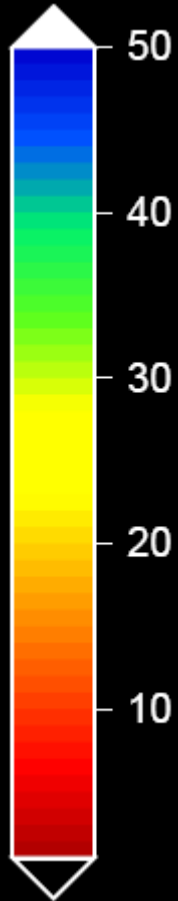
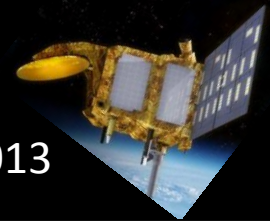
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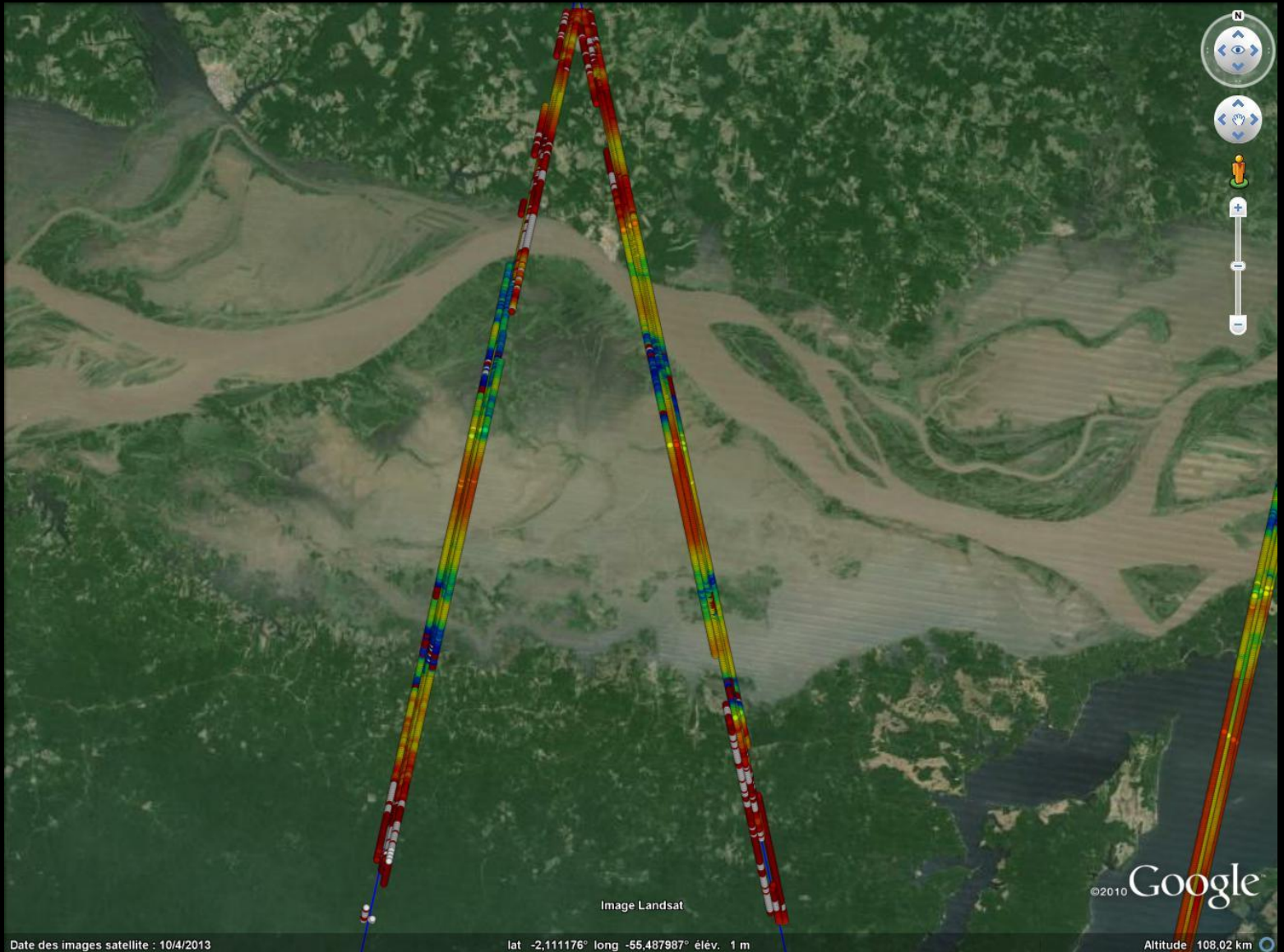
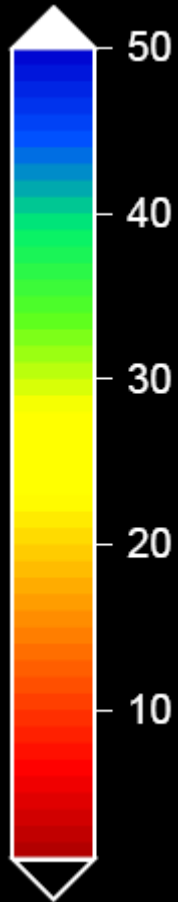
AltiKa altimetry for rivers

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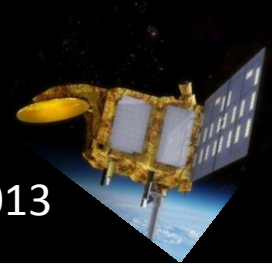
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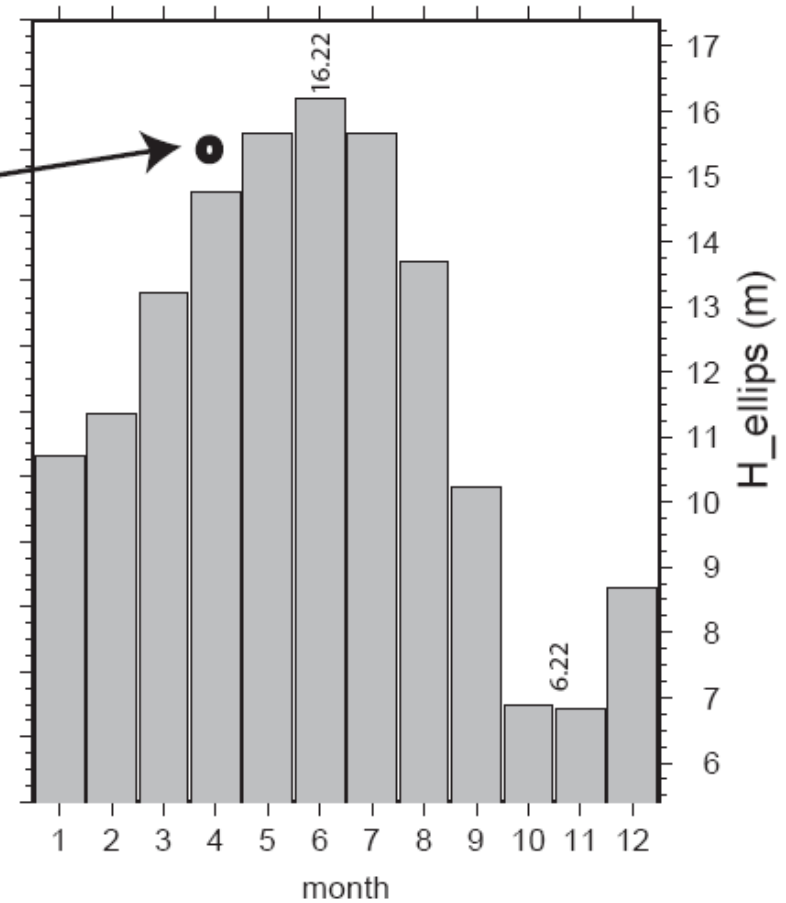
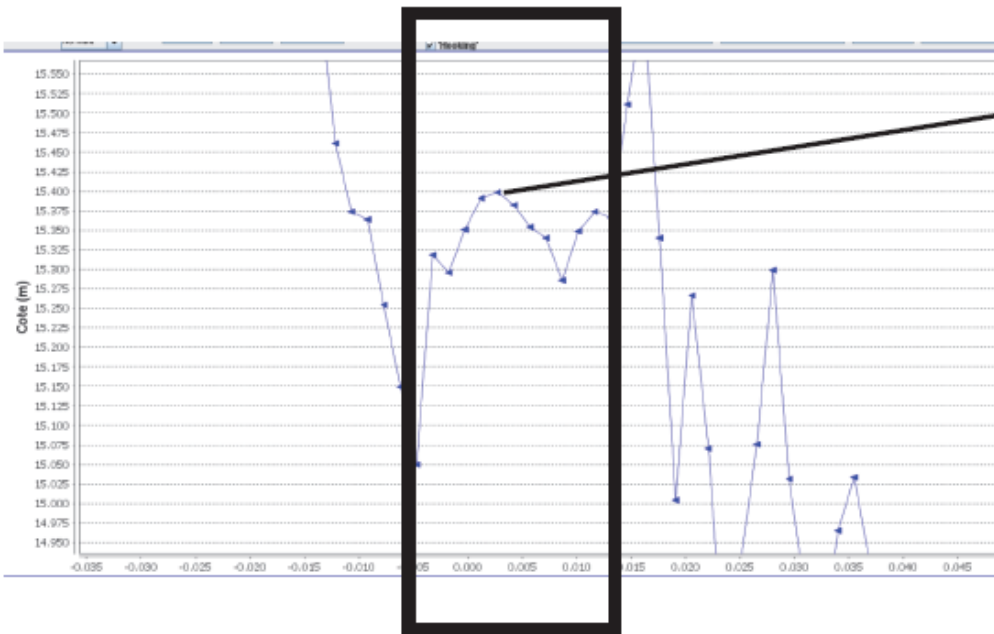
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3- The question of tracking mode

MNT Tracking Mode ? Ok ...

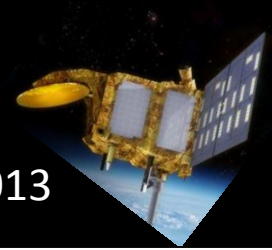
SARAL track 693 / cycle 1 / MNT mode (2013 - 04 - 07)



Monthly means by ENVISAT

AltiKa altimetry for rivers

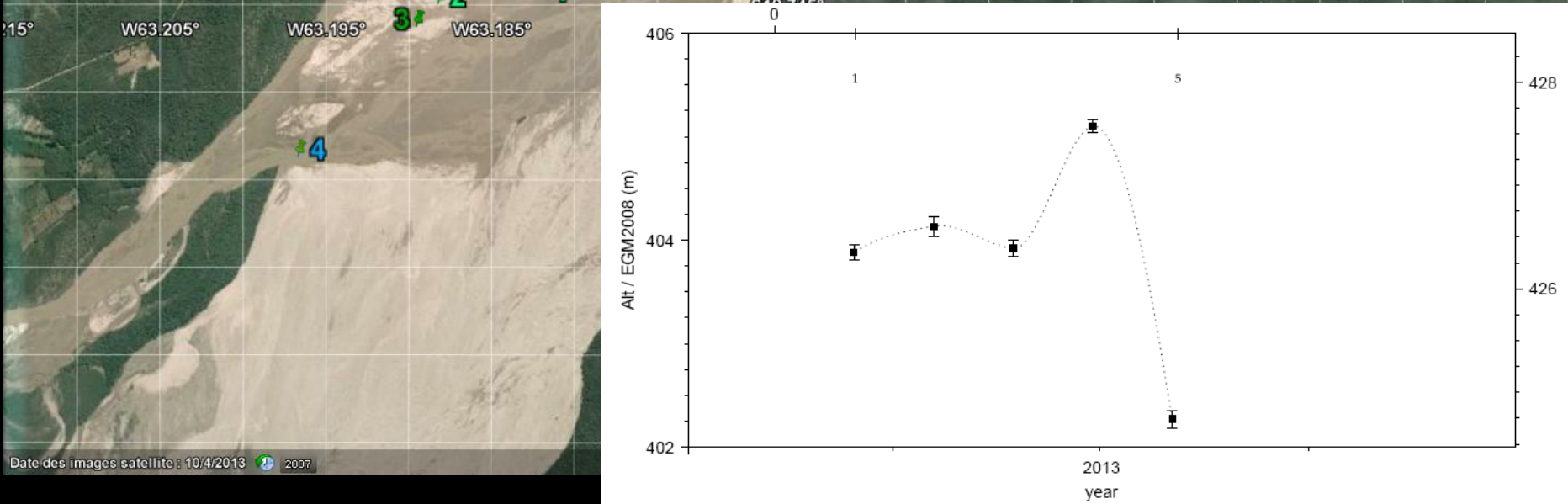
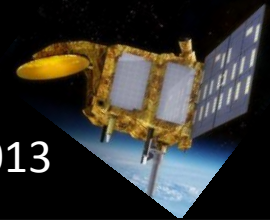
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4- orbit stability/repeatability

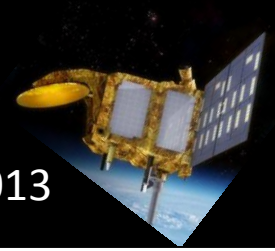
AltiKa altimetry for rivers

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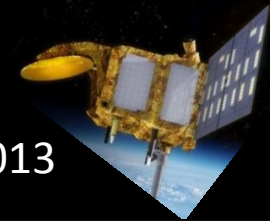
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5- sensitivity to rain falls

AltiKa altimetry for rivers



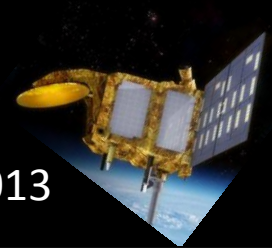
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LOCATION	(length of crossing)	pass	CYCLE			
			1	2	3	4
IRACEMA	AMAZONAS (3km)	63	[Green bar]			
		478				
IRANDUBA	SOLIMOES	149	[Green bar]			
		564				
PARICATUBA	NEGRO (2km)	149	[Red bar]	X	X	
		564	[Green bar]	[Red bar]		
BARCELOS	NEGRO (10 km)	779	[Green bar]			
OBIDOS	AMAZONAS (2km)	306				
		349	[Black bar]			
SANTAREM	AMAZONAS (4 km)	807	X	[Green bar]		

data loss : 4/40 = 10%
 data useless : 6/40 = 15 %
 useful data = 75 %

AltiKa altimetry for rivers

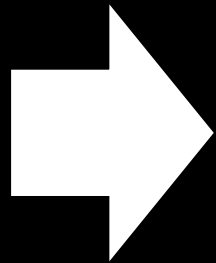
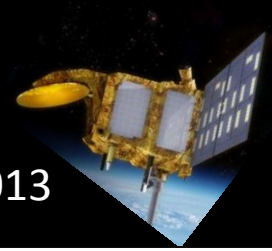
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6- Cal/Val & statistics

AltiKa altimetry for rivers

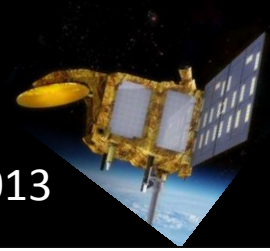
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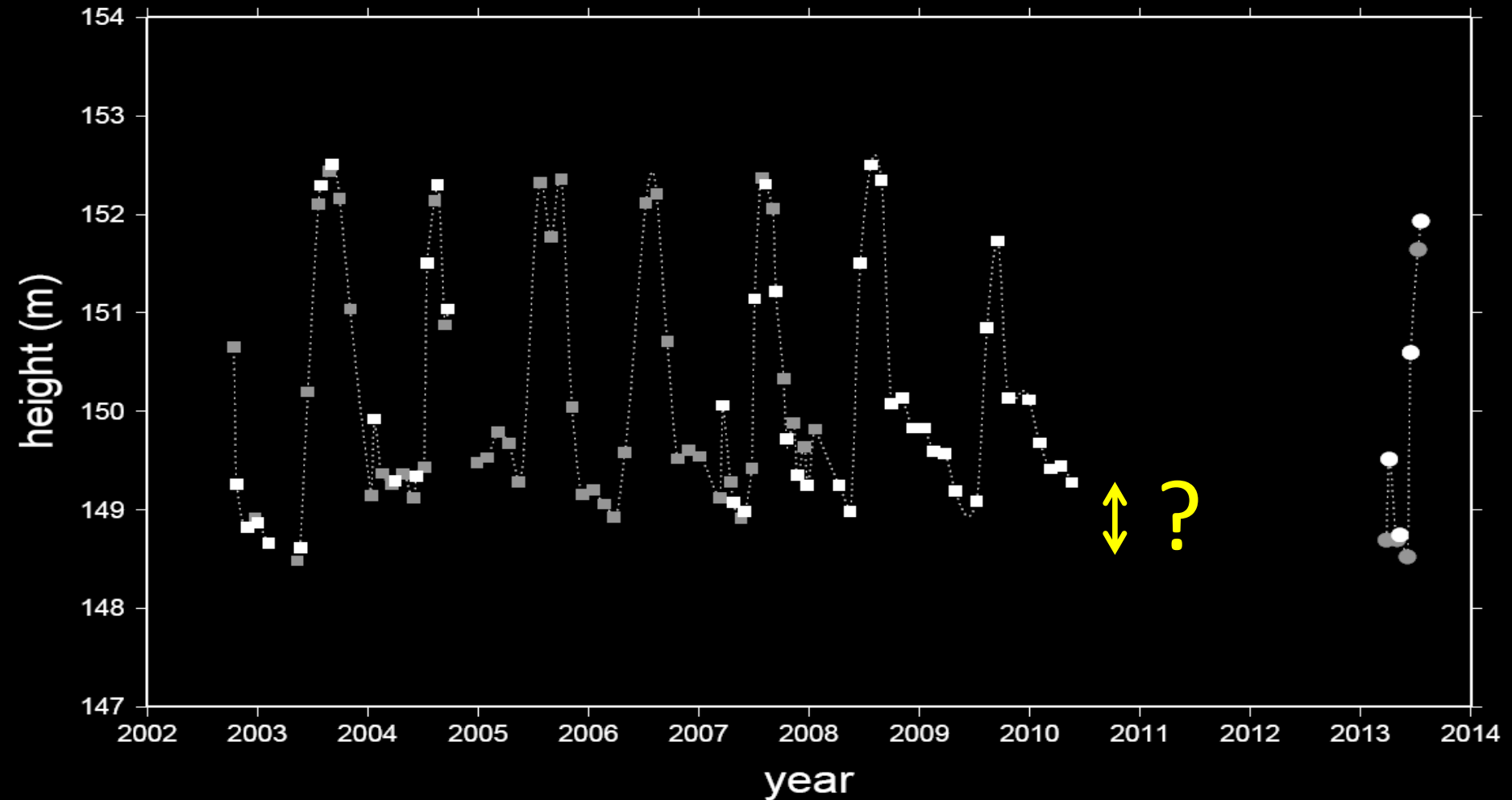
the question of continuity in the series

AltiKa altimetry for rivers

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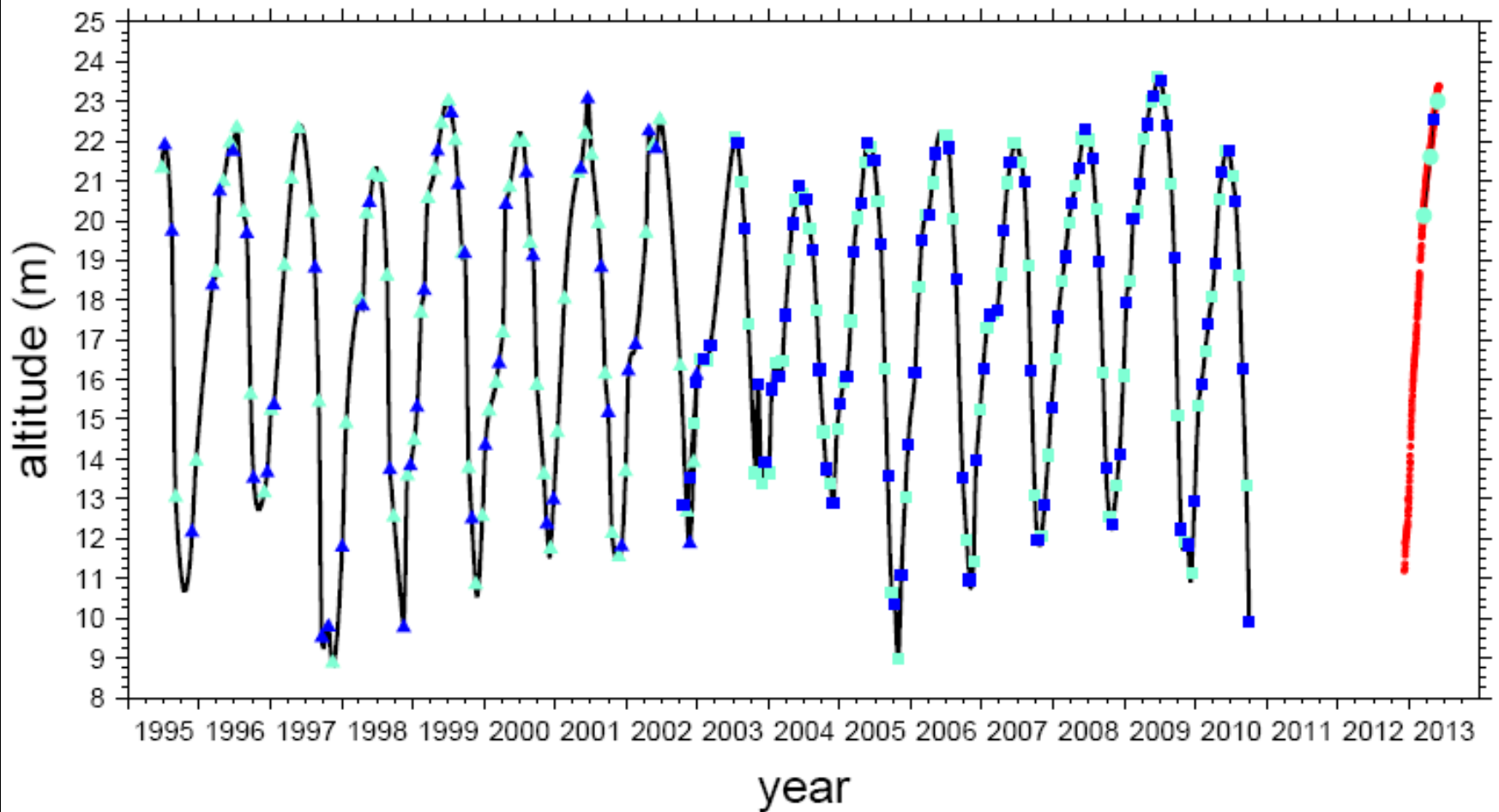


GANGA RIVER



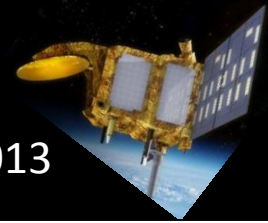


Cal/val sites : new sites

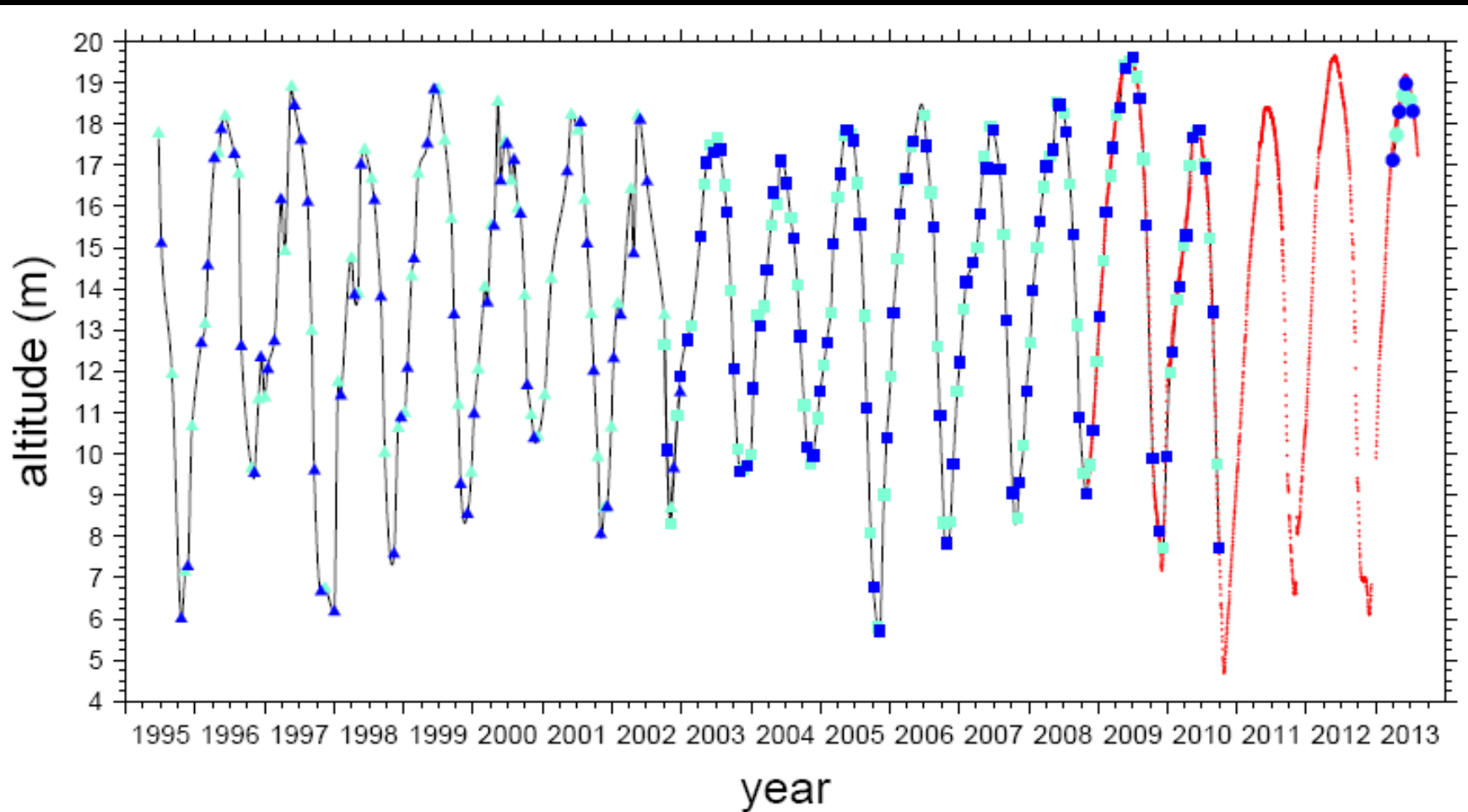


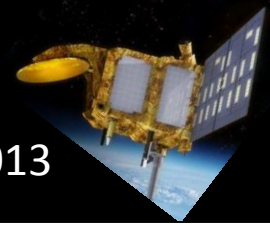
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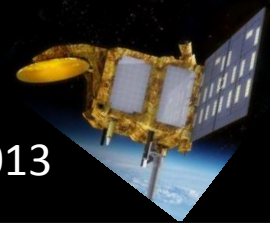
Re-use of ENVISAT sites





STATISTICS

	RMS diff. (m)	mean diff. (m)	N
IRACEMA (Rio Amazonas)	0.085	0.612	7
IRANDUBA (rio Solimoes)	0.090	1.326	6
PARICATUBA (Rio negro)	0.048	0.074	4
BARCELOS (Rio Negro)	0.123	0.140	4
OBIDOS (Rio Amazonas)	0.160	-0.16	3
SANTAREM (Rio Amazonas)	0.098	-0.12	4



Conclusions (very preliminary...):

- AltiKa is working well over rivers (rms < 20 cm)
- it will enable the continuation of the ERS-2 /ENVISAT series, although the levelling between the series remains an open question
- Rain does not seem to provoke significant data loss



Final message :

SARAL/AltiKa is so great that we must think now for

SARAL/AltiKa-2 in order to insure that the series

will be uninterrupted at least until the launch of

SWOT/Karin (Ka band interferrometry)