

CryoSat-2 SARin mode over great rivers

CryoSat Third Users Workshop, 12-14 March 2013, Dresden, Germany

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B. Lucas⁽²⁾, P. Femenias⁽²⁾, F. Boy⁽³⁾, N. Picot⁽³⁾ and
J. Benveniste⁽²⁾

Presented by Nicolas Bercher

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Thursday 14th March 2013



Questions & Objectives

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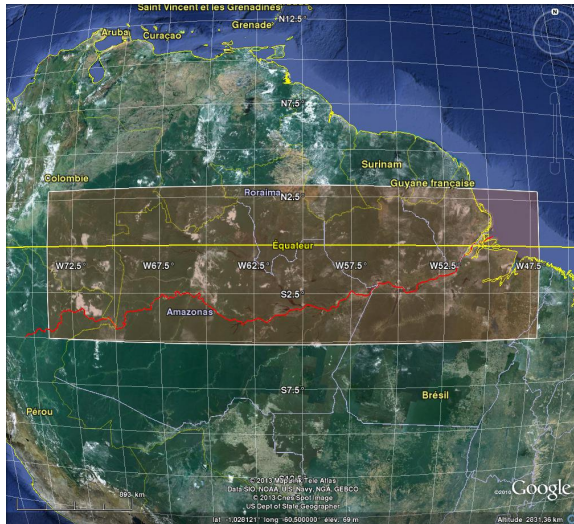
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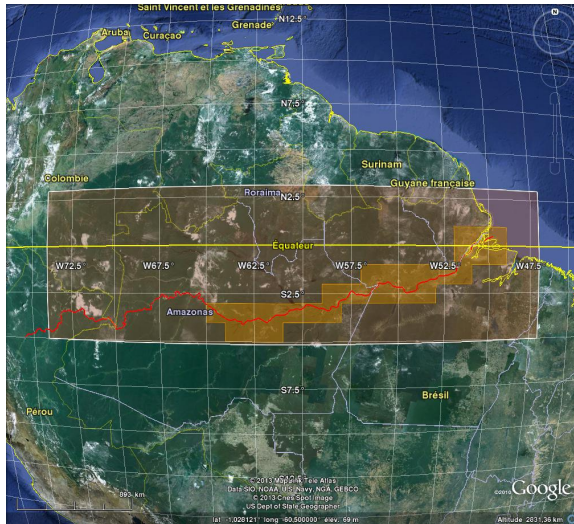
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- Merge multi-mission data products to build “alti-hydrological” products

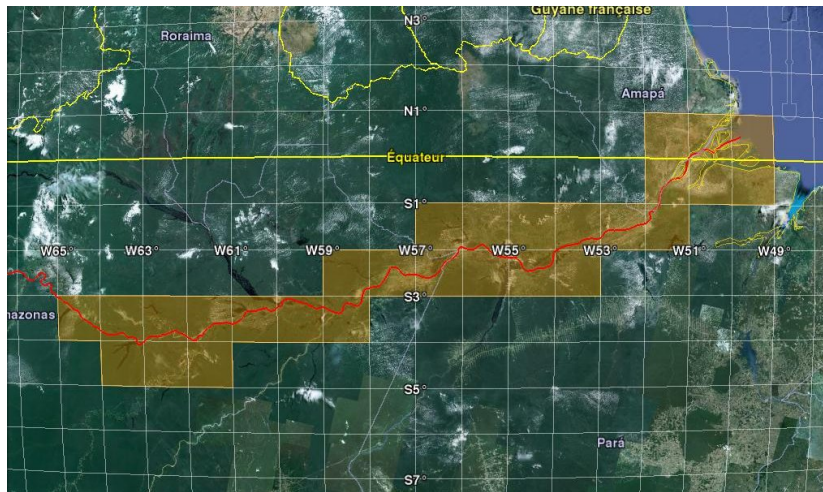
Downstream Amazon & Solimões rivers (SARin)



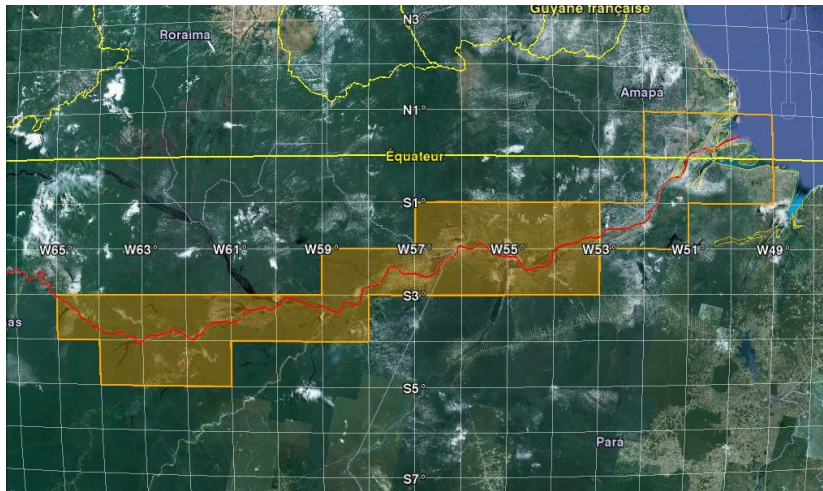
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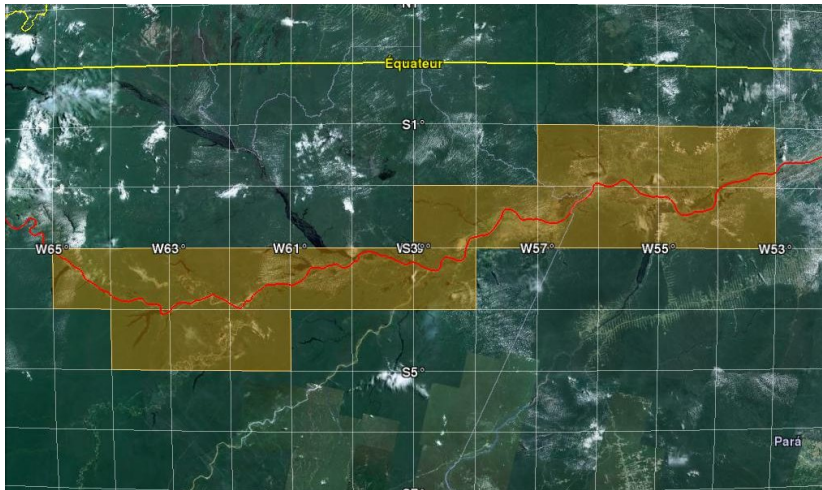
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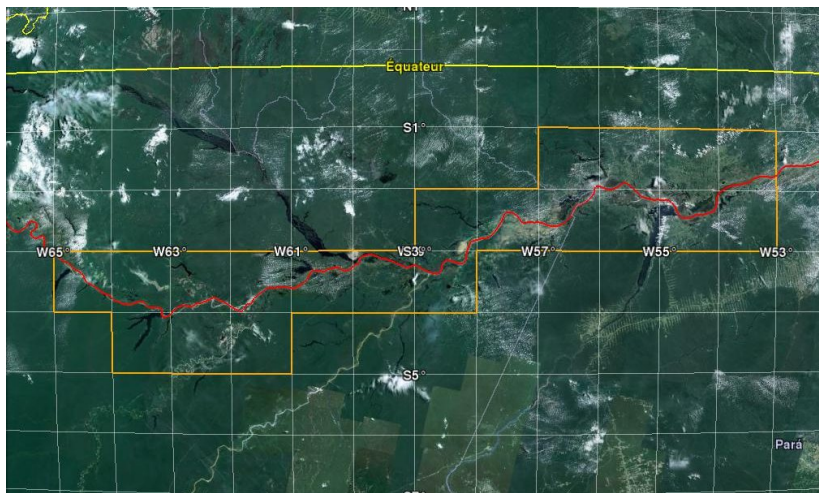
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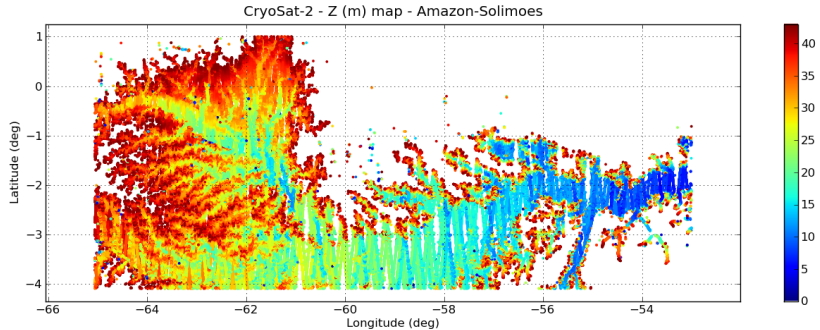


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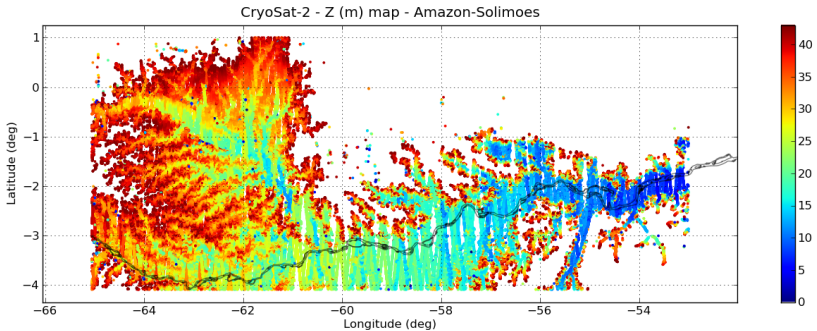
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Extracted data



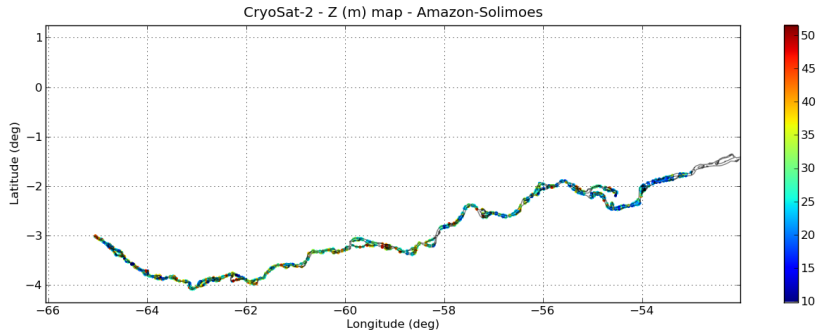
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Extracted data + main river bed boundaries (SWBD)



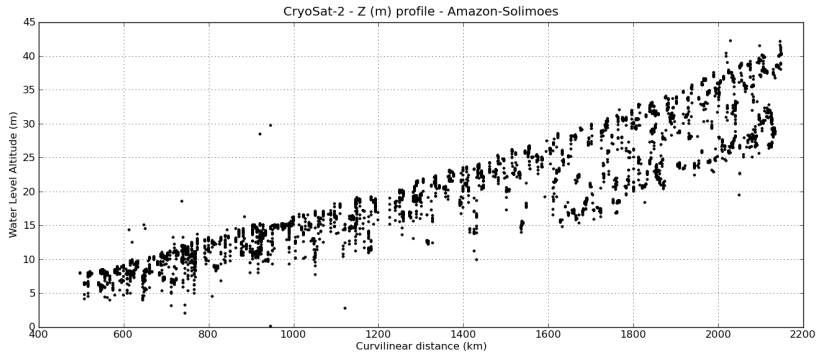
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Extracted data within main river bed boundaries (SWBD)



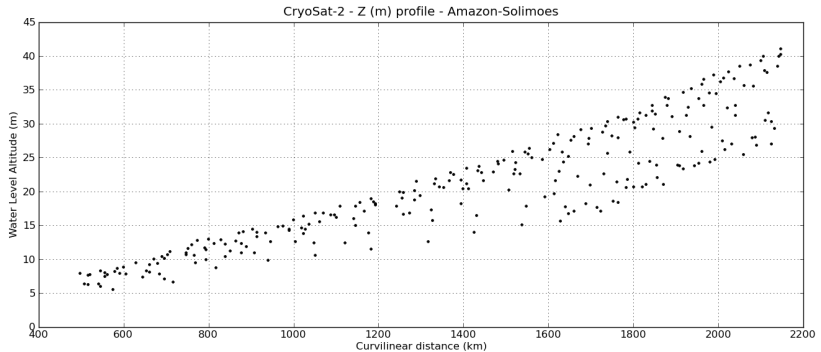
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River Water level profile (not filtered)



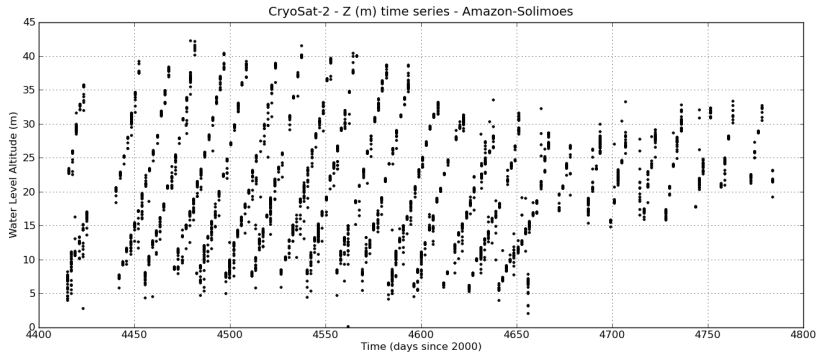
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River Water level profile (filtered)



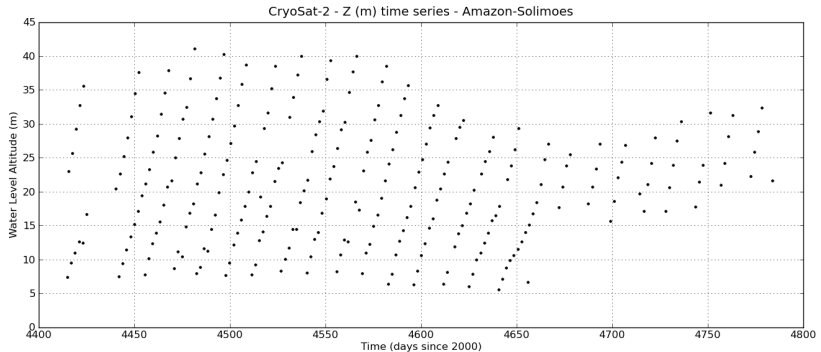
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River Water level time series (not filtered)



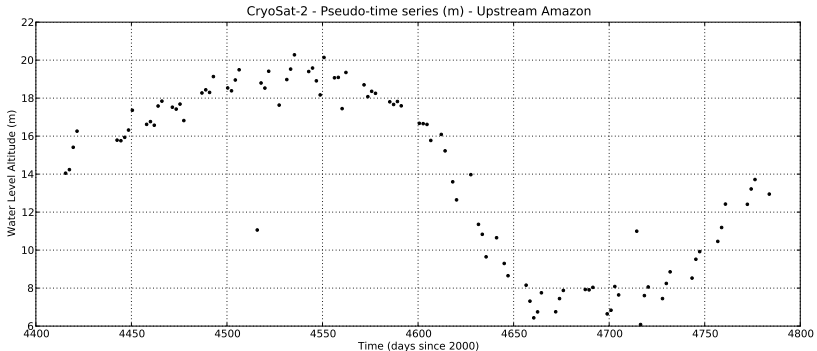
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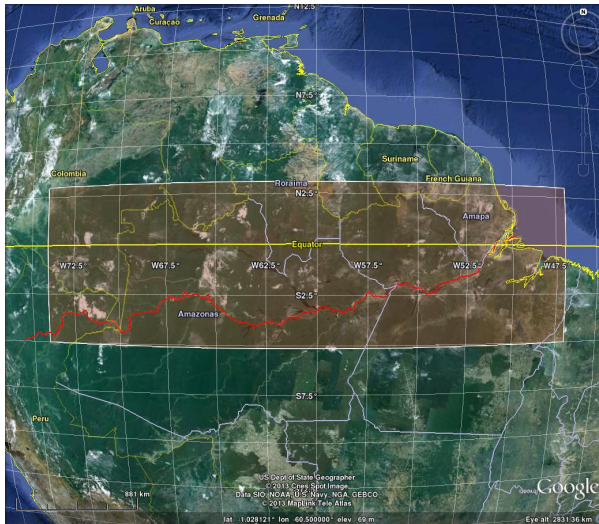


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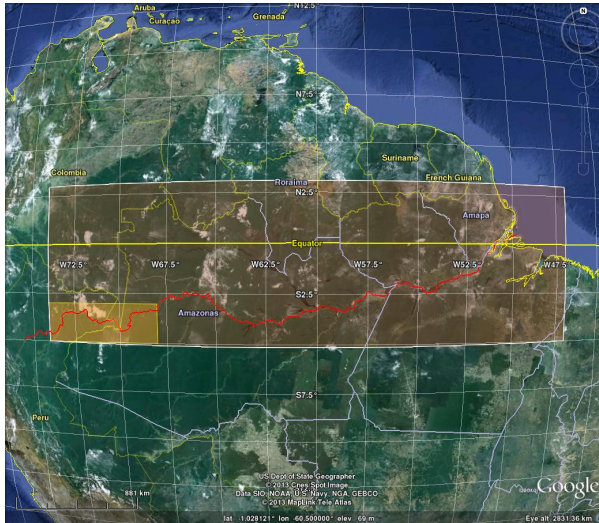
River Water level pseudo-time series (spatial variations removed, Jason-2)



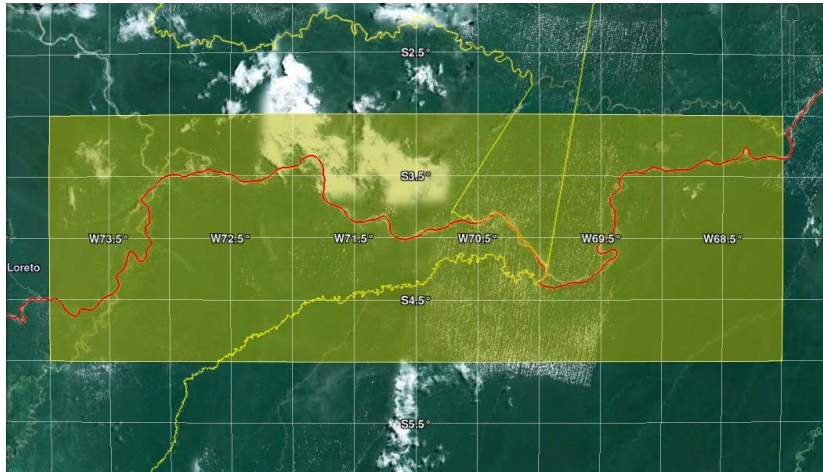
Upstream Amazon river (Solimões) (SARin)



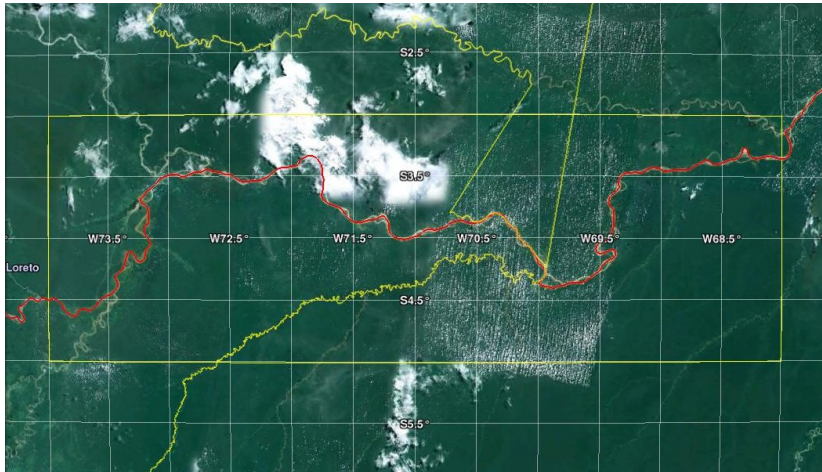
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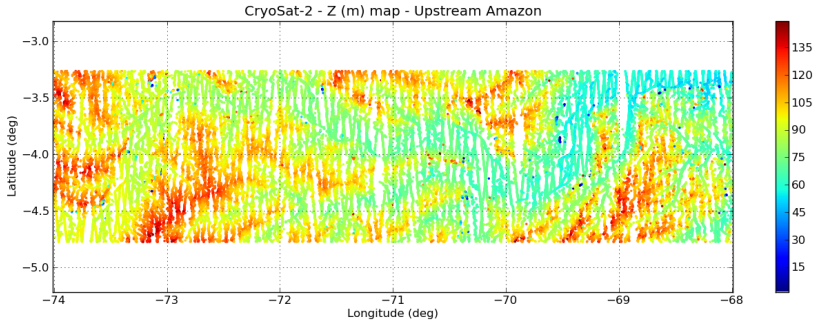


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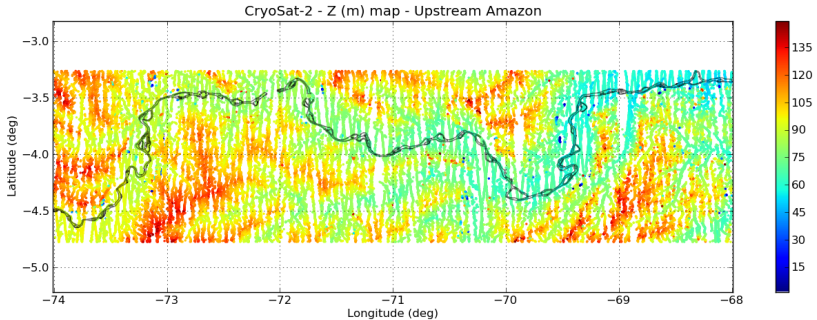
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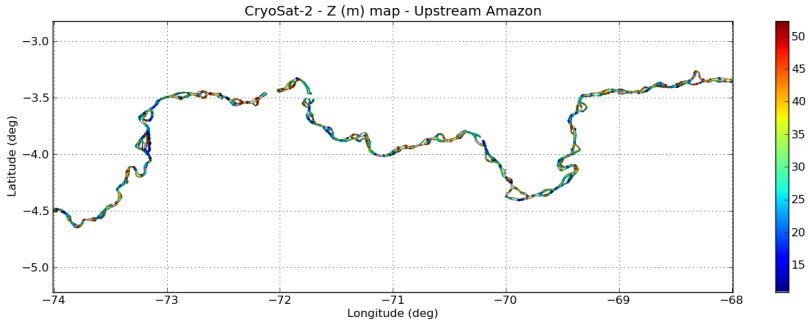
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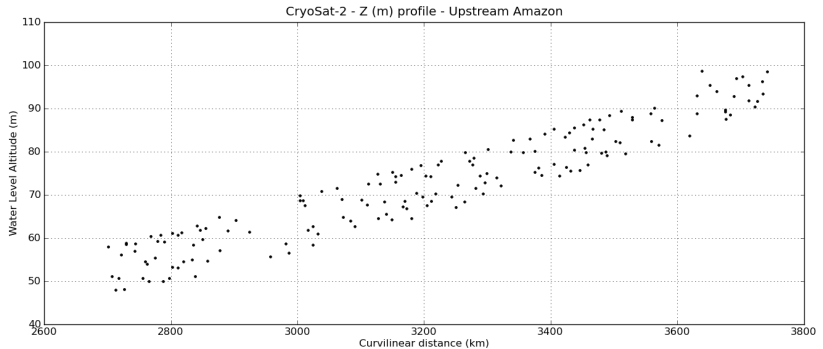
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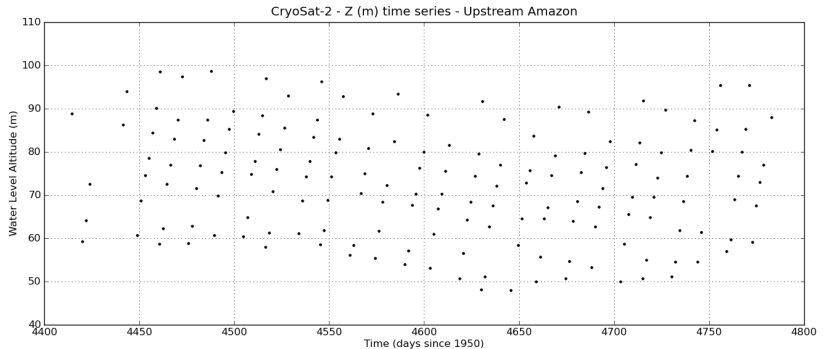
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River Water level elevation profile (filtered)

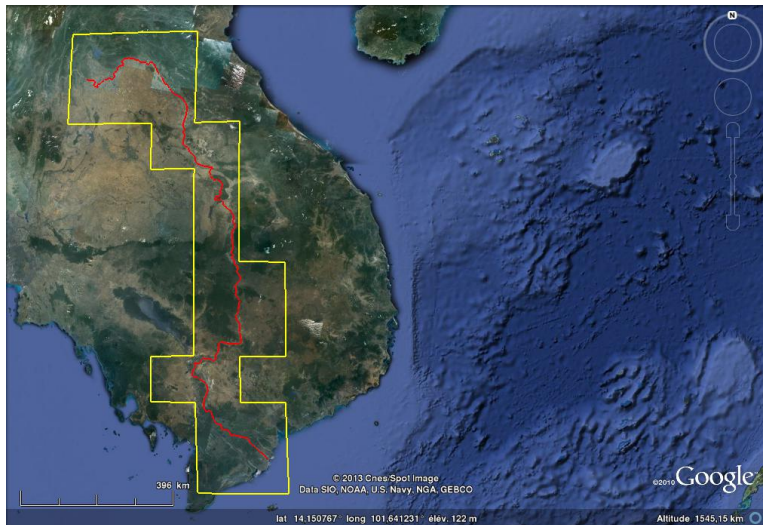


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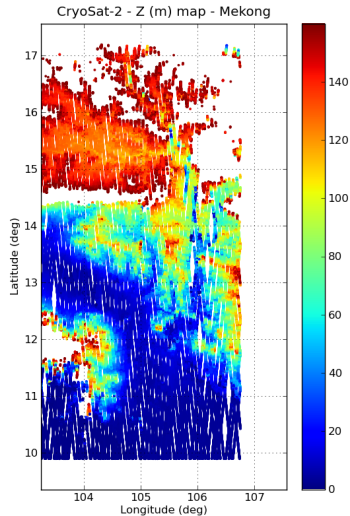
River Water level elevation time series (filtered)



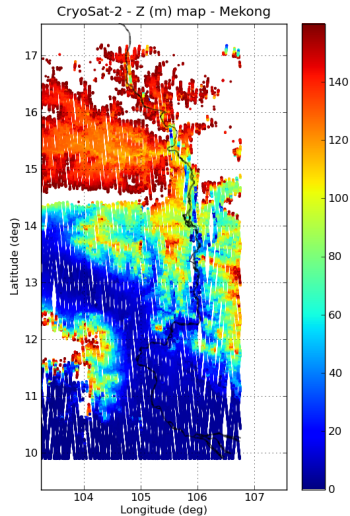
Mekong river (SAR)



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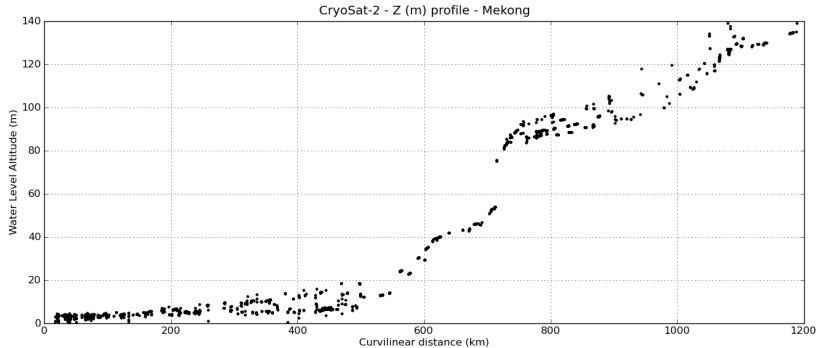


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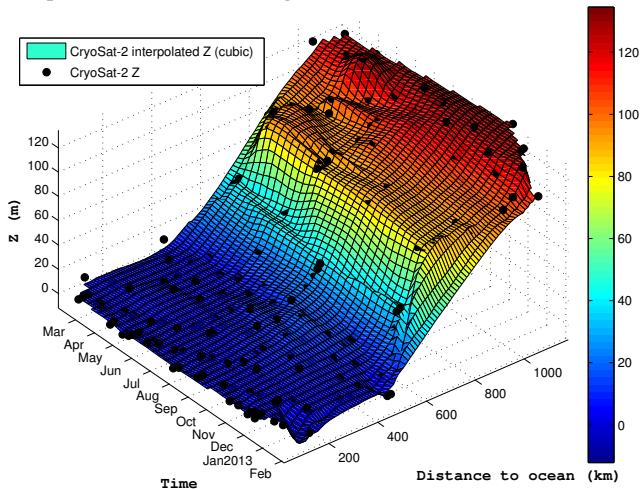
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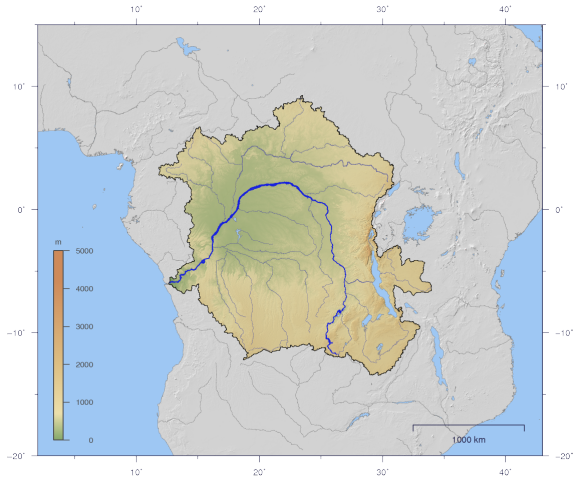


Mekong river (SAR)

CryoSat-2 SAR - Mekong river water level $Z(x,t)$

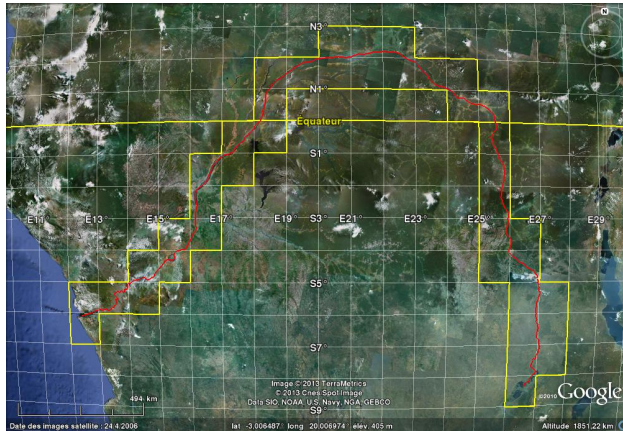


Congo river (SARin)



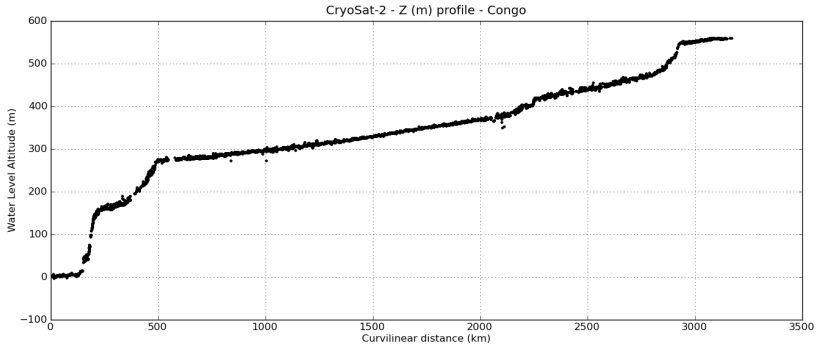
Source Wikipedia.org

Congo river (SARin)



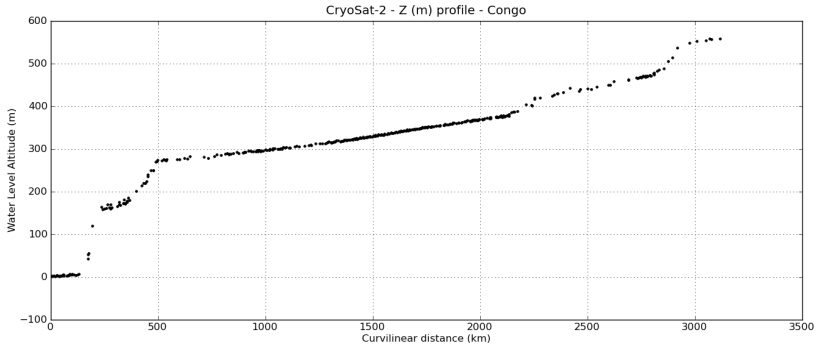
Congo river (SARin)

River Water level profile (edited, not filtered)



Congo river (SARin)

River Water level profile (edited, filtered)



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- Baseline B products seem to perform quite well !
 - However needs validation against in situ data and comparisons to other missions (Jason-2, AltiKa)
 - CryoSat-2 has an amazing potential for hydrology, it is a **major steps toward Swot mission** in terms of applications in hydrology

Perspectives

CryoSat-2 data processing

- Implement custom editing for each product

Forthcoming applications

Other study areas

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- Amazon source (alt. approx. 700 m, SARin)

