

Title

Initial Remarks

Base Act. (1)

Base Act. (2)

Base Act. (3)

Base Act. (4)

Base Act. (5)

Main Results

Add Studies

Acknowledgements

Present activities for connecting Brazilian and Argentine Vertical Networks with basis on geopotential numbers

Sílvio R C de Freitas

Daniel Del Cogliano

Roberto T Luz

Sergio Cimbaro

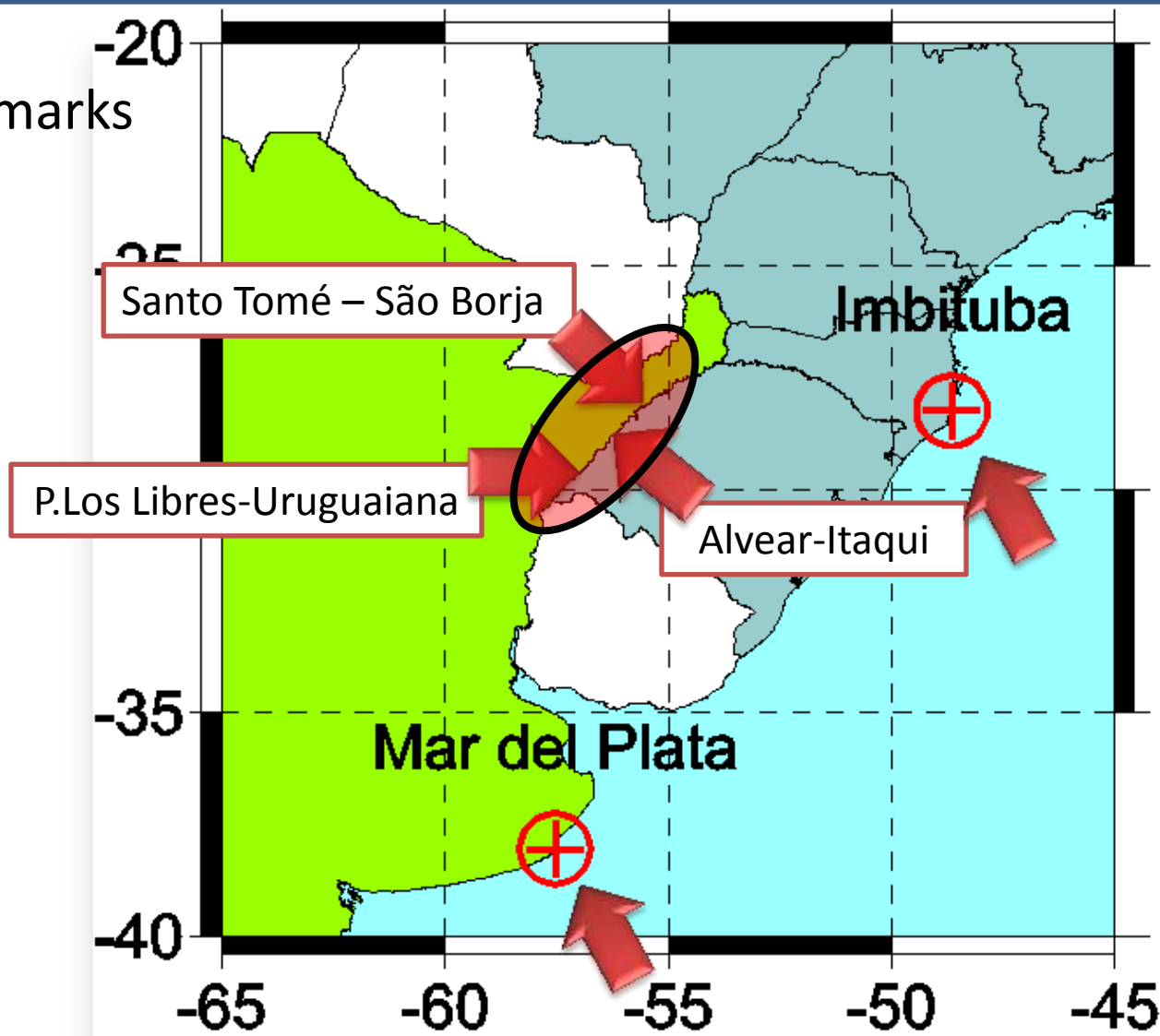
Rogers A D Pereira

Maria Eugenia Gomez

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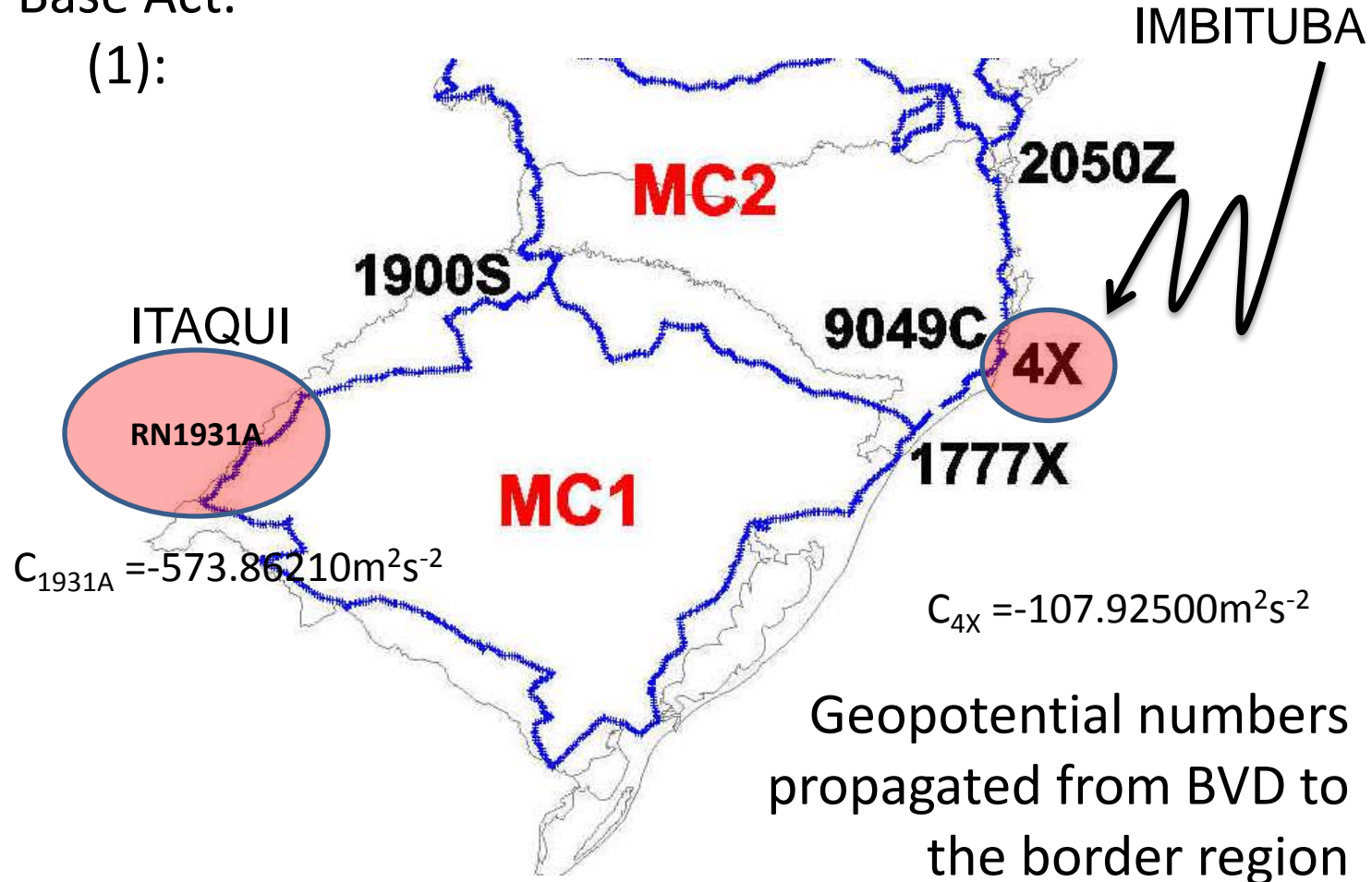


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Base Act.

(1):

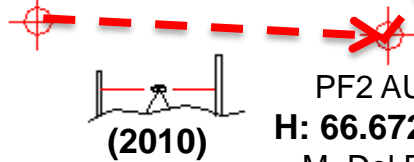


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Base Act. (2):

PF (ND238) N161
H: ?????? m
 M. Del Plata

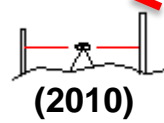


PF2 AUX2
H: 66.67232 m
 M. Del Plata

Santo Tome – São Borja

1st result:
Dif.: 0.81955 m

RN UFPR 08/10
H: 65.75325 m
 M. Del Plata



RN UFPR 08/10
H: 66.5728 m
 Imbituba



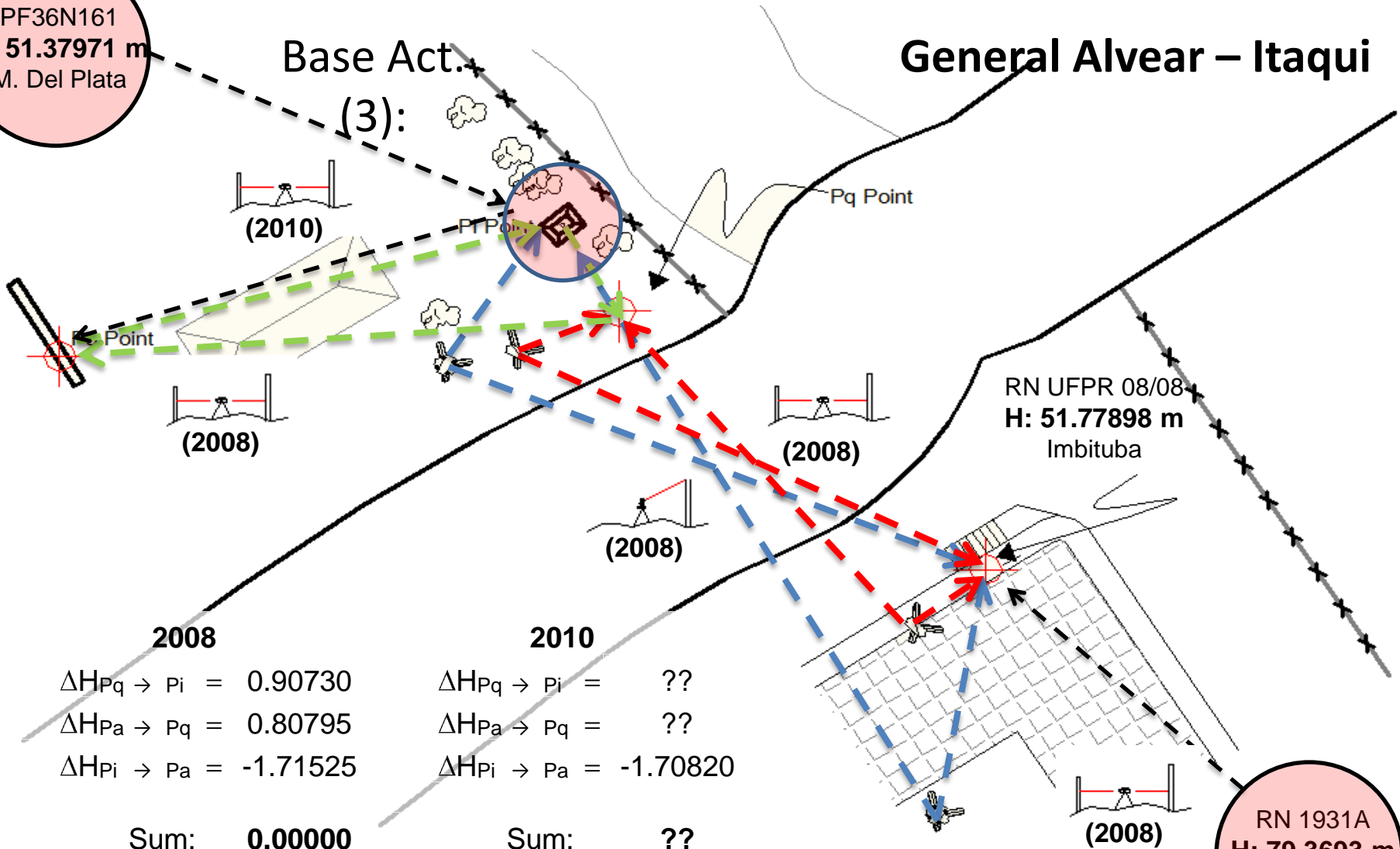
RN 1923 U
H: 79.3693 m
 Imbituba



Present activities for connecting Brazilian and Argentine Vertical Networks with basis on geopotential numbers

General Alvear – Itaqui

PF36N161
H: 51.37971 m
M. Del Plata



2008

$$\begin{aligned} \Delta H_{Pq \rightarrow Pi} &= 0.90730 \\ \Delta H_{Pa \rightarrow Pq} &= 0.80795 \\ \Delta H_{Pi \rightarrow Pa} &= -1.71525 \end{aligned}$$

Sum: **0.00000**

2010

$$\begin{aligned} \Delta H_{Pq \rightarrow Pi} &= ?? \\ \Delta H_{Pa \rightarrow Pq} &= ?? \\ \Delta H_{Pi \rightarrow Pa} &= -1.70820 \end{aligned}$$

Sum: ??

RN 1931A
H: 79.3693 m
Imbituba

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Taking account 2008 data...



ΔH trigonometric \longrightarrow



3rd result:
Dif.: 0.70081 m

\longleftarrow ΔH river crossing tech.



Pi Point

Pi Point
H: 52.23408 m
M. Del Plata

R. cross	Trigon
Pi Point	Pi Point
H: 52.96168 m	H: 52.93489 m
Imbituba	Imbituba

2nd result:
Dif.: 0.7279 m

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Base Act. (4):



4th result:
Dif.: 0.7193 m

Paso de Los Libres - Uruguaiiana

PFA 1XA
H: 55.1954 m
M. Del Plata

PFA 1XA
H: 55.91465 m
Imbituba



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▲ h

☀ H and g

◻ H, h and g

— Roads

Base Act. (5):

- ✓ GNSS – Gravimetry on line from São Borja to Uruguaiana (Br. and Ar side);
- ✓ GNSS on conection points;
- ✓ Levelled points;

△ h and g

● H, h and g

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Main Results

1. Dynamical heights for each circuit
2. Differences to official network



Effects in using difference levels from official heights in place of observed difference levels :

Point	Official	Observed	Difference
RN1922M			
RN1922J	-1.6579	-1.6578	0.0001
RN1922N	-5.0143	-5.0144	-0.0001
RN1922U	-7.8456	-7.8457	-0.0001
RN1922X	-1.4949	-1.4950	-0.0001
RN1923M	7.2517	7.2509	-0.0008
RN1923R	-16.3994	-16.4000	-0.0006
RN1931C	-6.0550	-6.0560	-0.0010
RN1923T	1.6279	1.6285	0.0006
RN1931B	3.1121	3.1115	-0.0006
RN1923X	12.2141	12.2144	0.0003
RN1931A	-20.7770	-20.7772	-0.0002
		(m)	(m)
		Sum:	-0.0025



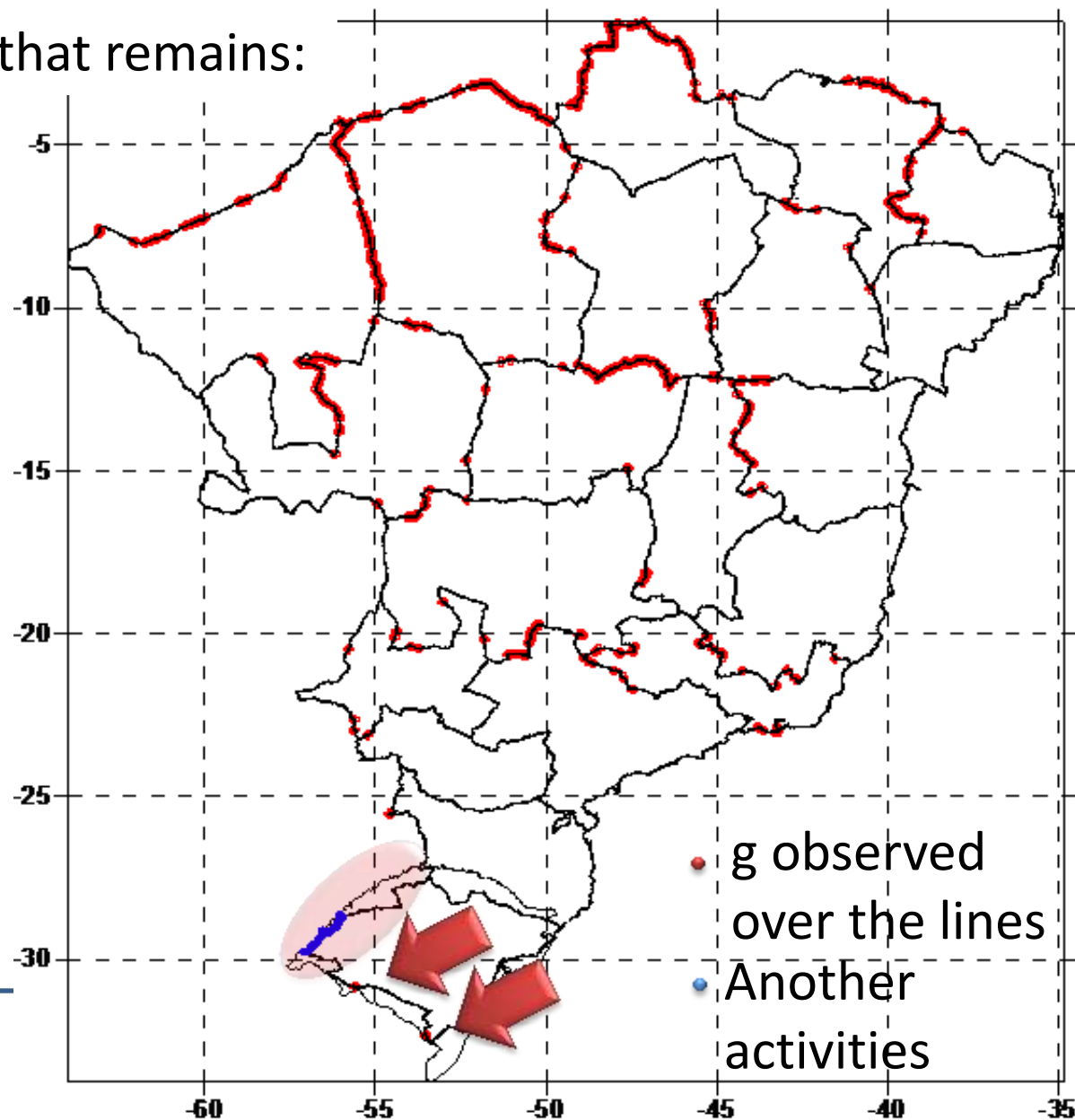
Mean dif. to Br net: 0.0256 m (0.00248)
Mean dif. to Ar net: 0.6945 m (0.00108)



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Difficulties that remains:



Present activities for connecting Brazilian and Argentine Vertical Networks with basis on geopotential numbers

Brazilian Side				
Latitud (DD)	Longitud (DD)	N comp (m)	N (m) - EGM	Dif. (m)
-28.63149242	-55.99902631	11.2929	10.8650	0.4279
-28.64404381	-56.01525968	11.4178	10.9109	0.5069
-28.66027099	-56.00628670	11.2339	10.8916	0.3423
-28.66298438	-55.99998576	11.1156	10.8757	0.2399
-28.68346290	-55.99467796	11.0709	10.8661	0.2048
-28.84267225	-56.07543274	11.3937	11.1803	0.2134
-28.90097126	-56.09094677	11.3785	11.2951	0.0834
-29.16311449	-56.38165528	12.3721	12.3453	0.0268
-29.16669107	-56.48873239	12.5855	12.5548	0.0307
-29.16949861	-56.54753711	12.6395	12.6545	-0.0150
-29.14214313	-56.53628881	12.6456	12.6266	0.0190
-29.13085106	-56.54655247	12.7024	12.6388	0.0636
-29.12199688	-56.55654198	12.7063	12.6518	0.0545
-29.11798503	-56.55472899	12.6735	12.6475	0.0260
-29.11314519	-56.55532663	13.3448	12.6468	0.6980
-29.13085106	-56.54655247	12.7024	12.6388	0.0636
-29.26203393	-56.54722048	12.7049	12.6786	0.0263
-29.36164851	-56.54753711	12.8546	12.6894	0.1652
-29.44424081	-56.58175259	12.9597	12.7818	0.1779
-29.54002854	-56.64396299	13.2147	12.9474	0.2673
-29.60271662	-56.68435372	13.3143	13.0474	0.2669
-29.72759019	-56.80499141	13.4976	13.3012	0.1964
-29.74932917	-56.86560058	13.8958	13.4276	0.4682

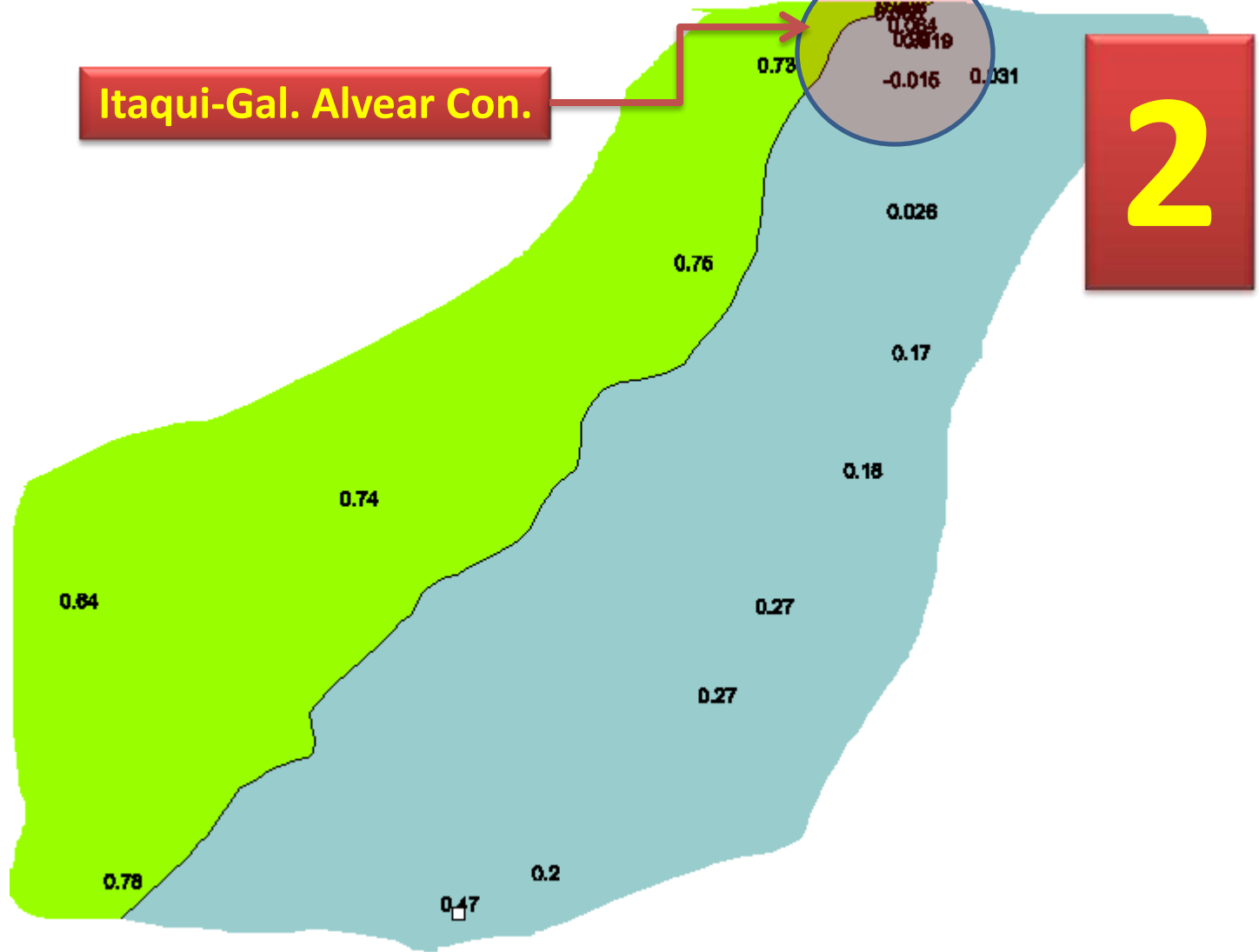
Mean (m) 0.1980
SD (m) 0.18693

Argentine Side				
Latitud (DD)	Longitud (DD)	N comp. (m)	N (m) - EGM	Dif. (m)
-28.55033606	-56.03477375	11.9070	10.9420	0.9650
-28.59726428	-56.02742242	11.6320	10.9302	0.7018
-28.58789936	-56.09426562	11.7890	11.1161	0.6729
-28.69968661	-56.19124736	12.1790	11.4174	0.7616
-28.73415634	-56.29449402	12.4590	11.7250	0.7340
-28.85161449	-56.32805778	12.6890	11.9565	0.7325
-28.94341524	-56.42911405	13.0580	12.3159	0.7421
-29.04702872	-56.54040766	13.3290	12.5981	0.7309
-29.10081472	-56.566414	13.3890	12.6612	0.7278
-29.15882586	-56.64258561	13.5320	12.7995	0.7325
-29.29816452	-56.70085457	13.7070	12.9599	0.7471
-29.46394956	-56.93636478	14.1720	13.4315	0.7405
-29.53585011	-57.13341008	14.4300	13.7853	0.6447
-29.73325028	-57.10243008	14.5460	13.7610	0.7850

Mean (m) 0.7442
SD (m) 0.07251

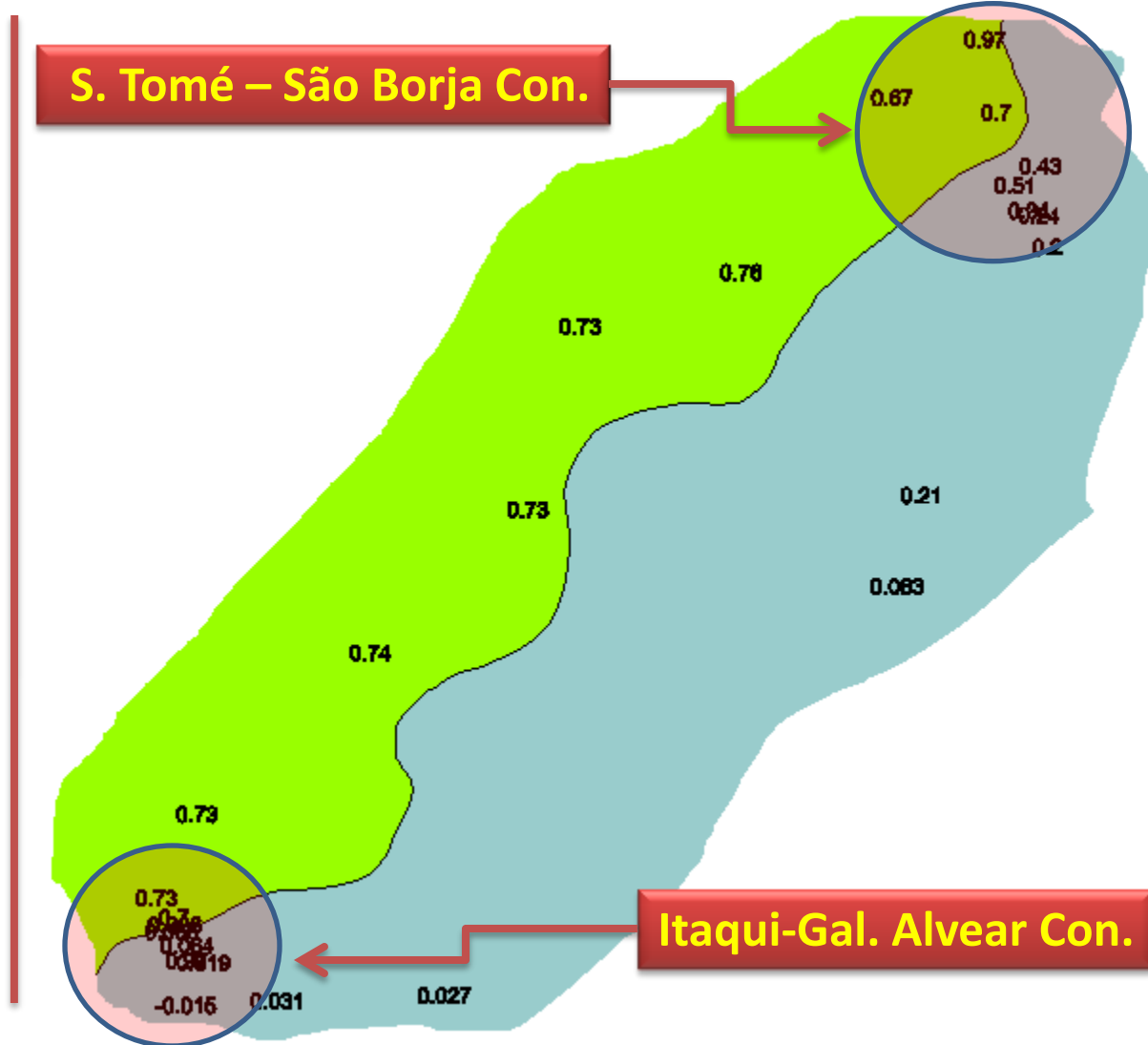
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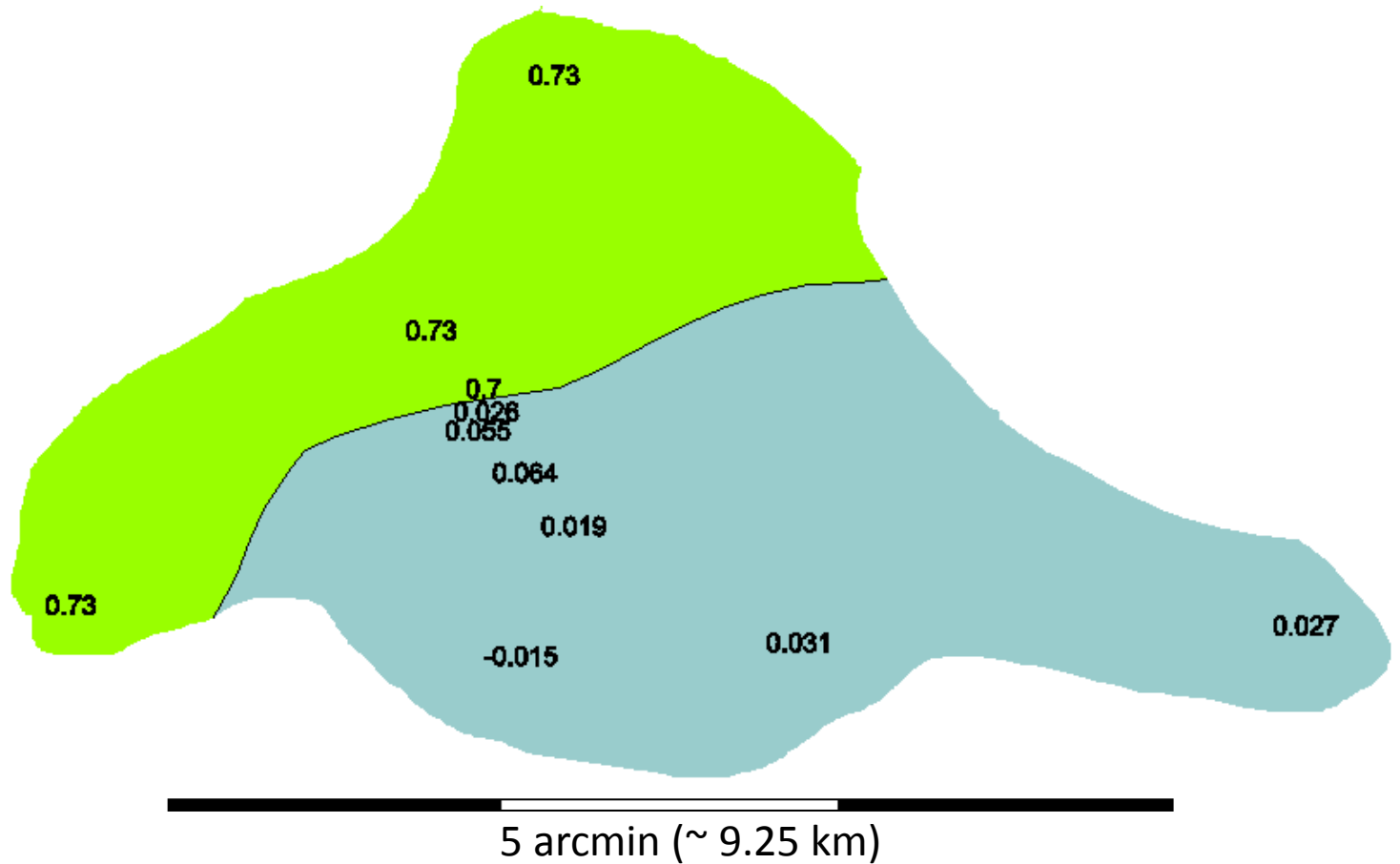


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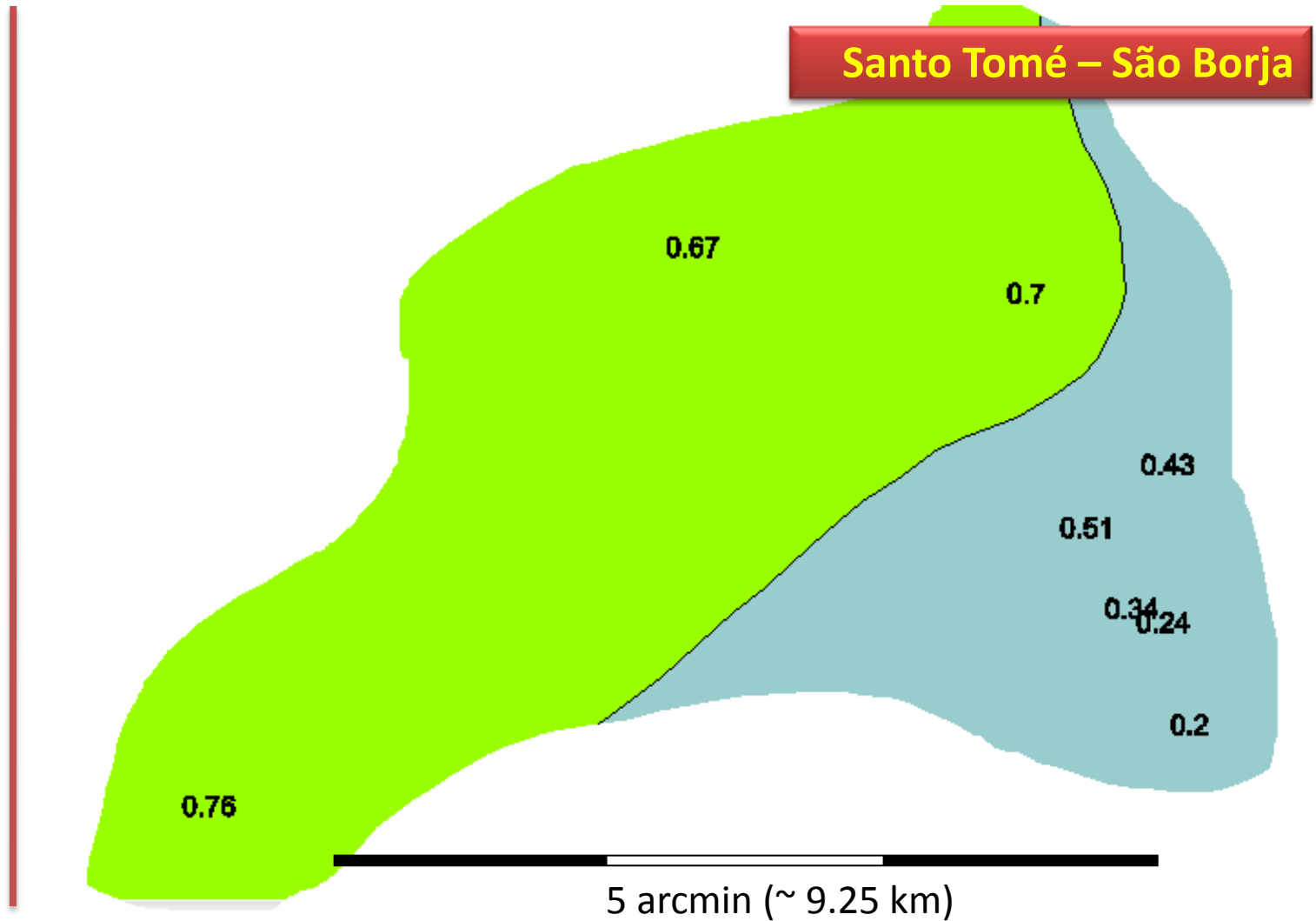
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Itaqui-Gal. Alvear Con.

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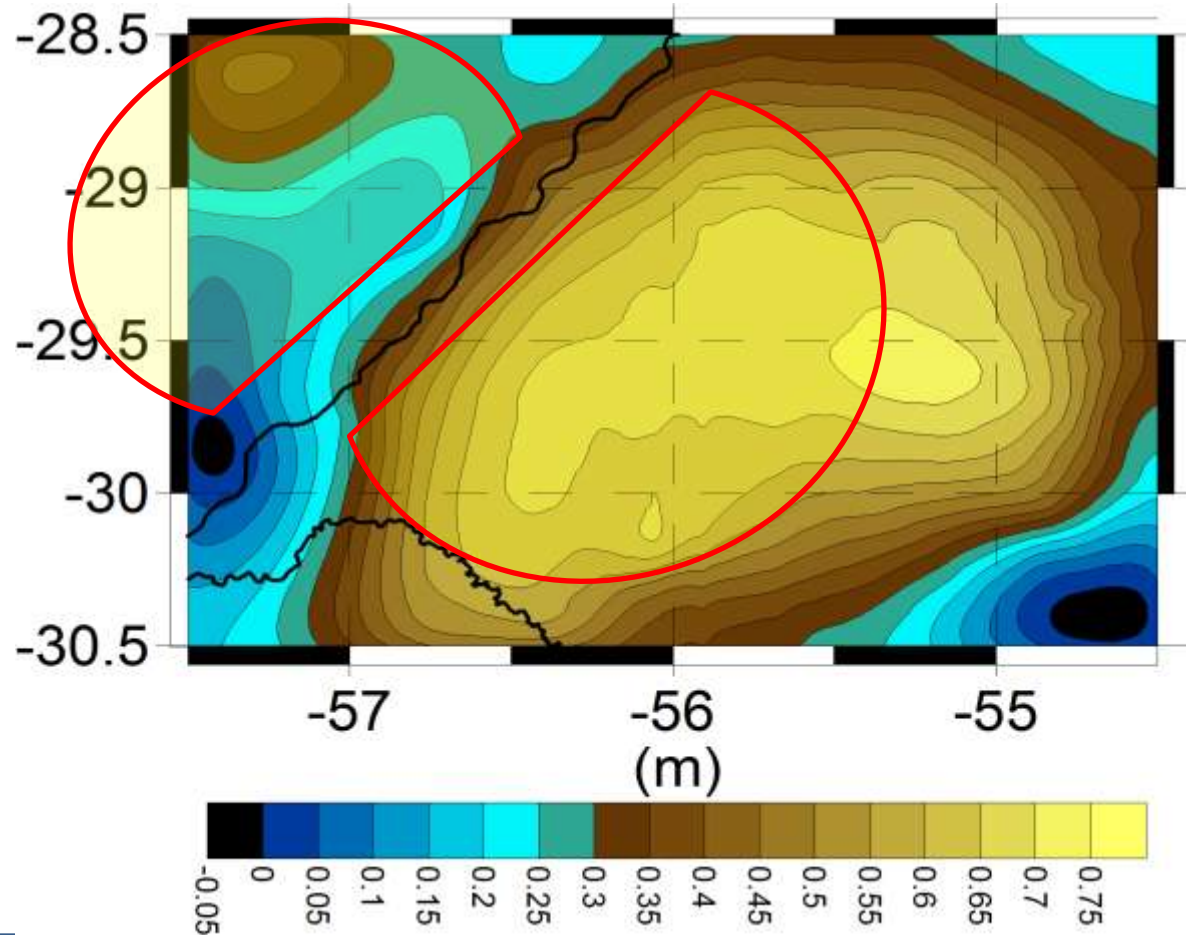
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Main Results (2):

Stokes num. integration ($\Delta g_{B-Brasill \text{ or } Argentina} - \Delta g_{B-mean}$)



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