

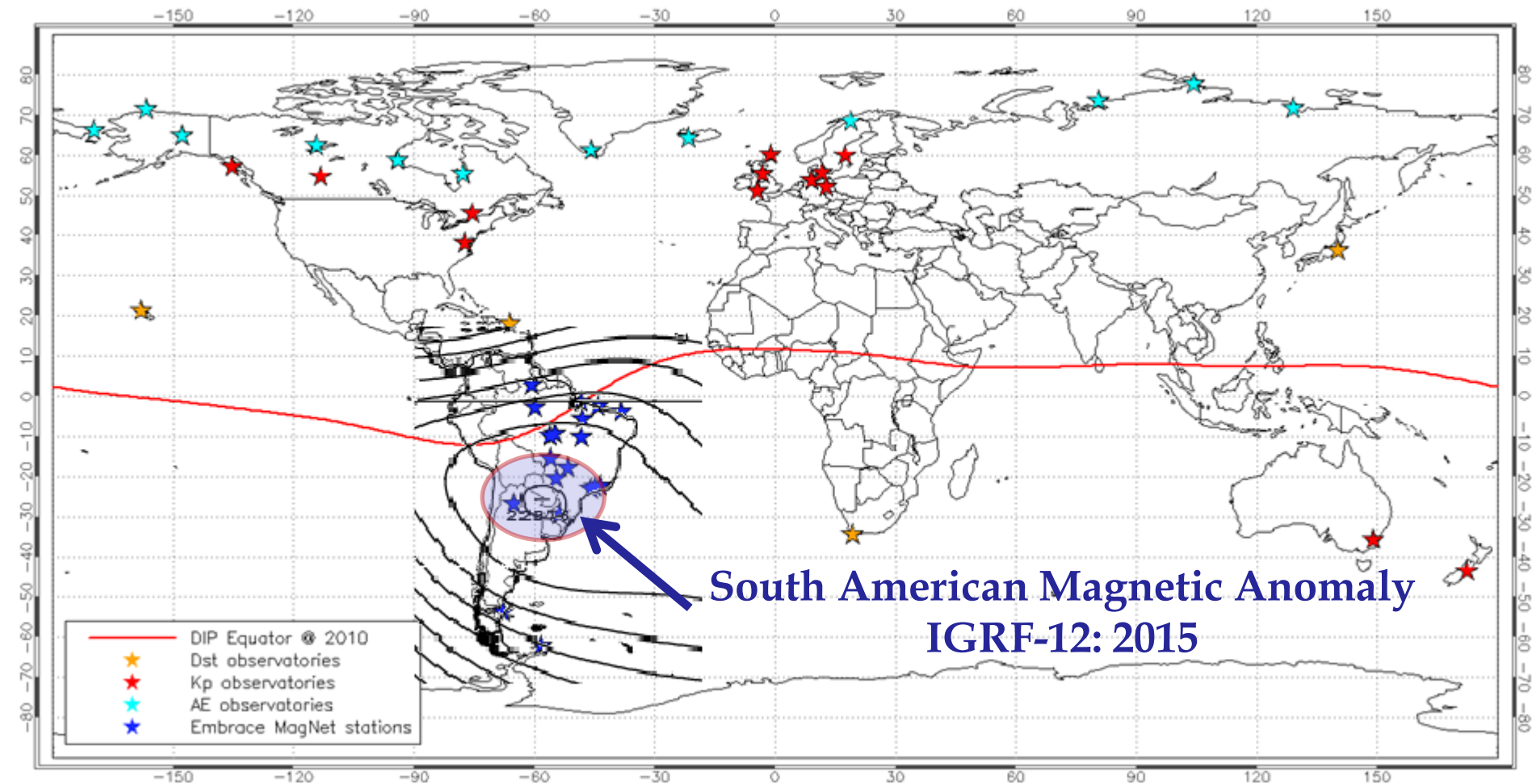
Operative Space Weather: Development of the South American Magnetic Index **Ksa**

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Vice-Presidente do International Space Environment Service

South America Mag Anomaly

Courtesy:
Eng. Sony Su Chen



Geographical location of the Embrace magnetometer selected stations (and candidate stations) with the corresponding magnetic latitude, dip angle, estimated K9 lower limit and designed code.

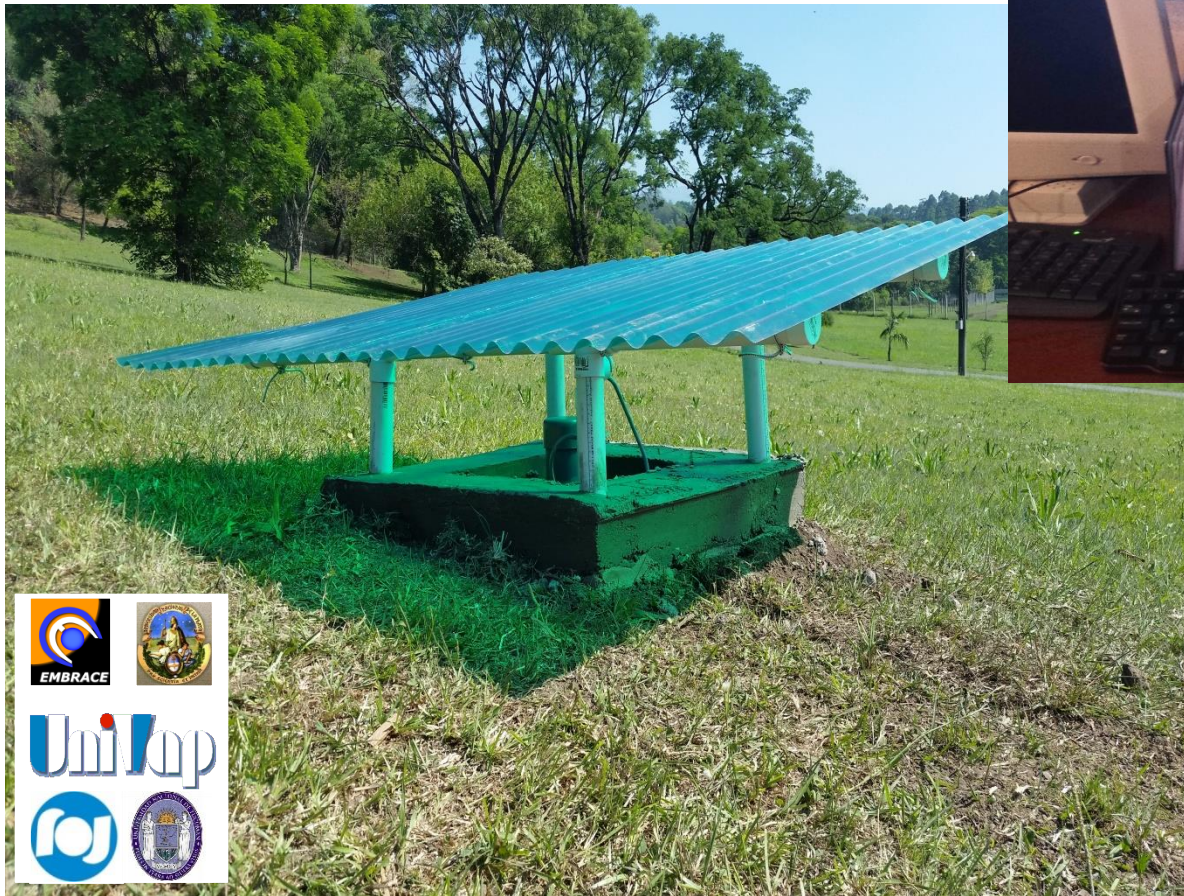
Magnetic stations	IAGA code	UN ^a	Geographic		Geomag. Lat. (°)	Altitude (m)	DIP (°)	K9
			Lat.	Lon.				
Belém – PA	BLM	BR	01°26'28"S	48°26'40"W	−00.4	016	−00.80	600
São Luís – MA	SLZ	BR	02°35'39"S	44°12'35"W	−03.6	032	−07.26	500
Alta Floresta – MT	ALF	BR	09°52'13"S	56°06'15"W	−03.7	284	−07.50	500
Cachimbo – PA	CXB	BR	09°21'27"S	54°54'53"W	−04.0	464	−07.79	500
Manaus – AM	MAN	BR	02°53'18"S	59°58'11"W	+04.4	102	+08.09	500
Araguatins – TO	ARA	BR	05°36'01"S	48°06'02"W	−05.6	103	−11.30	450
Eusébio – CE	EUS	BR	03°52'48"S	38°25'28"W	−08.2	043	−16.51	400
Palmas – TO	PAL	BR	10°17'50"S	48°21'41"W	−08.3	231	−16.52	400
Cuiabá – MT	CBA	BR	15°33'17"S	56°04'10"W	−08.5	233	−17.10	400
Boa Vista – RR	BOA	BR	02°48'02"N	60°40'33"W	+09.4	076	+18.80	400
Jataí – GO	JAT	BR	17°55'54"S	51°43'06"W	−12.3	708	−24.60	350
Campo Grande – MS	CGR	BR	20°30'24"S	54°37'04"W	−13.7	540	−25.50	350
Tucumán – TU	TCM	AR	26°49'20"S	65°11'40"W	−15.8	431	−27.35	300
Cachoeira Paulista – SP	CXP	BR	22°42'07"S	45°00'52"W	−18.9	601	−36.43	300
São José dos Campos – SP	SJC	BR	23°12'31"S	45°57'49"W	−19.1	583	−36.64	300
Vassouras – RJ	VSS	BR	22°24'07"S	43°39'08"W	−19.7	443	−38.40	300
São Martinho da Serra – RS	SMS	BR	29°26'37"S	53°49'22"W	−21.6	462	−36.65	300
Rio Grande – TF	RGA	AR	53°47'09"S	67°45'42"W	−39.9	010	−50.03	400
Estação Cmdt. Ferraz – AC	ECF	BR	62°05'06"S	58°24'12"W	−58.4	010	−53.20	800

^a UN = Country, BR = Brazil, AR = Argentine.

TCM



EMBRACE-01 TCM



EUS



EMBRACE-02 EUS



SLZ



EMBRACE-03 SLZ



RGA



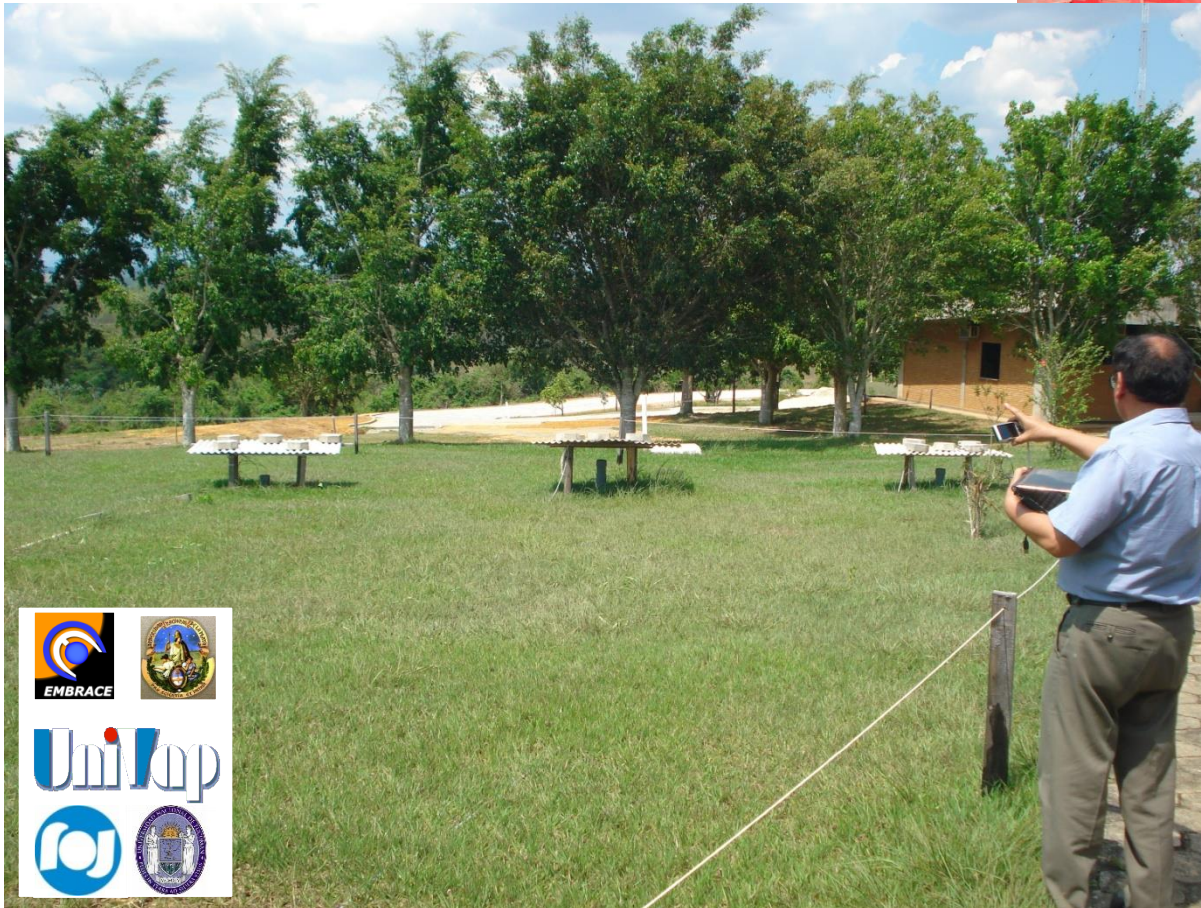
EMBRACE-04 RGA



CXP



EMBRACE-05 CXP



SMS



EMBRACE-06 SMS



VSS



EMBRACE-07 VSS



CBA



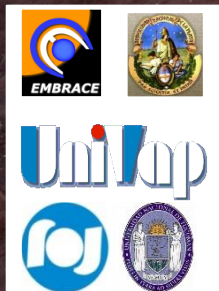
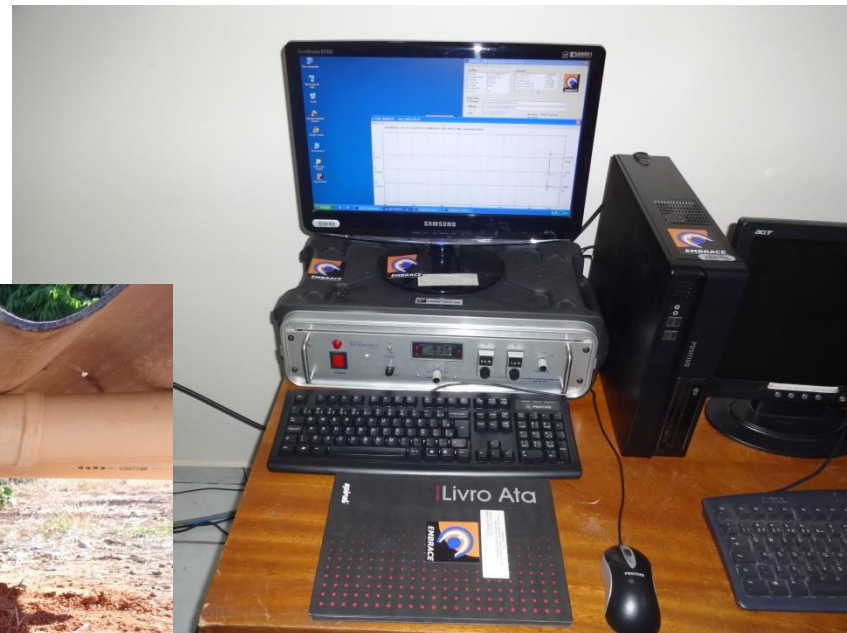
EMBRACE-08 CBA



AFT



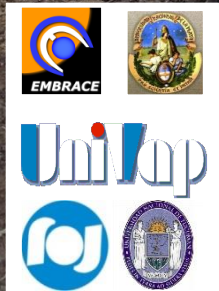
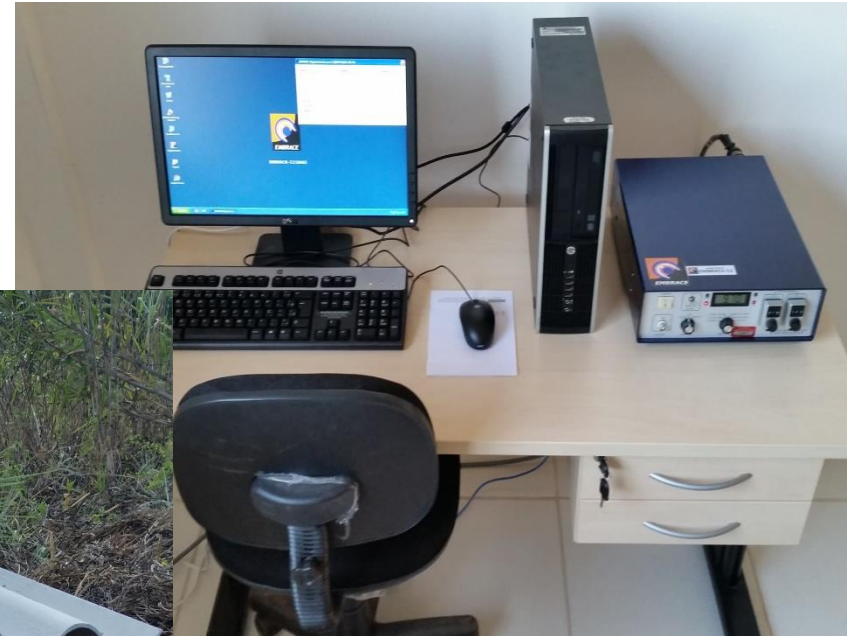
EMBRACE-09 AFT



ARA



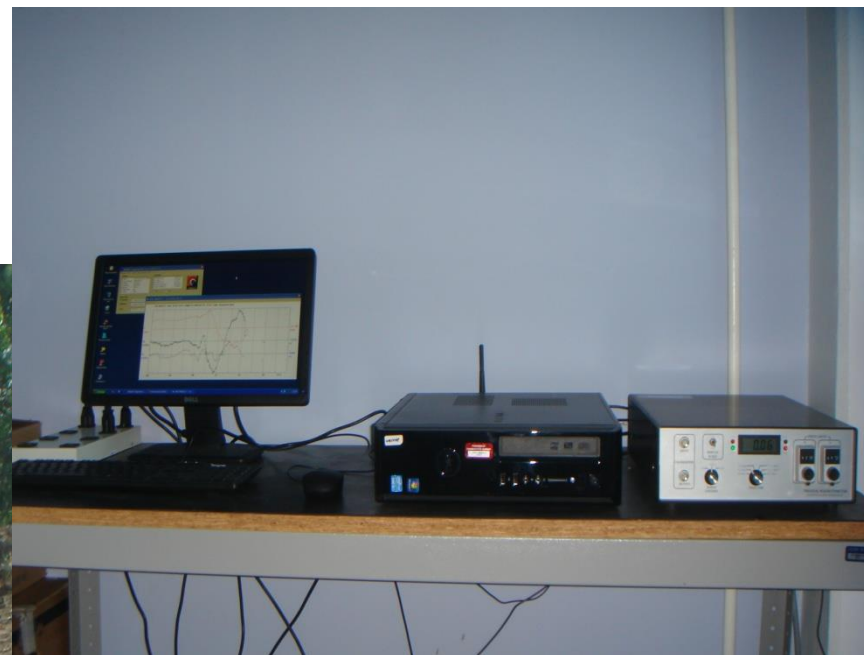
EMBRACE-12 ARA



SJC



UNIVAP-01 SJC



JAT



UNIVAP-02 JAT



21 11 2013



21 11 2013

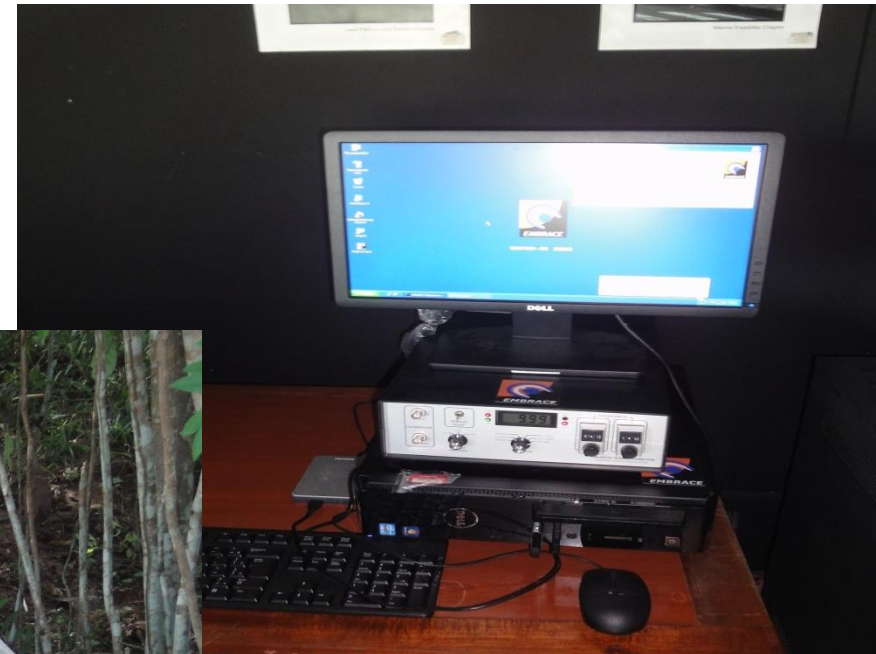


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MAN



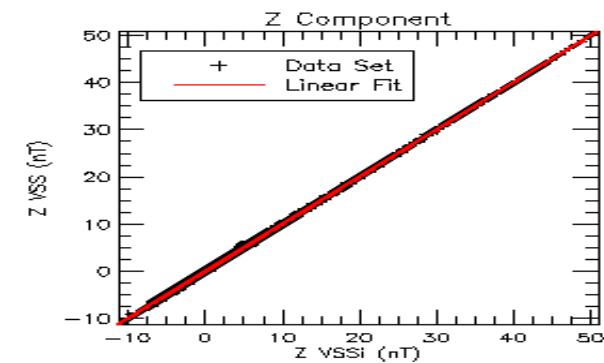
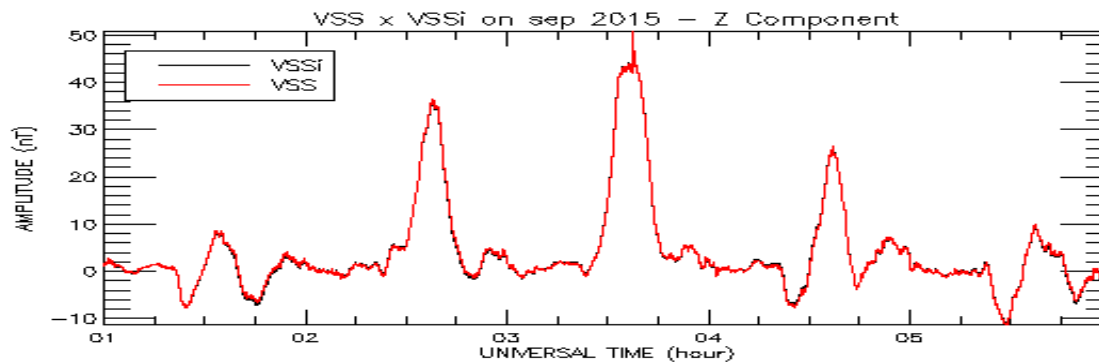
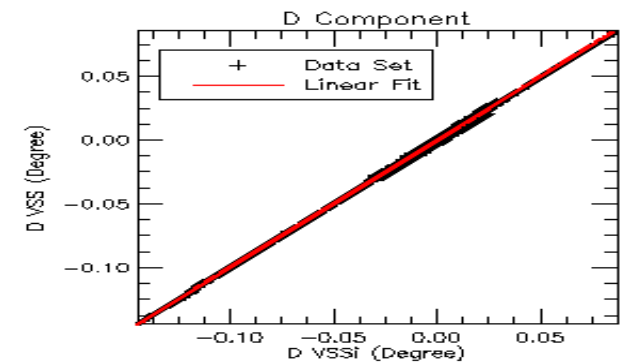
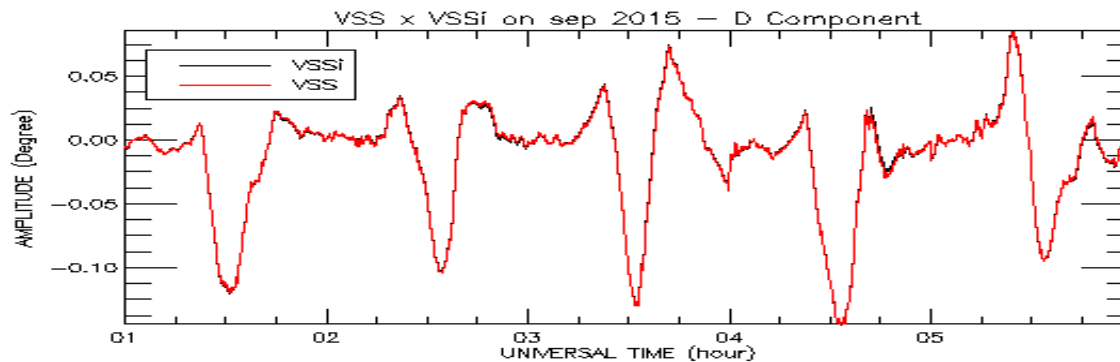
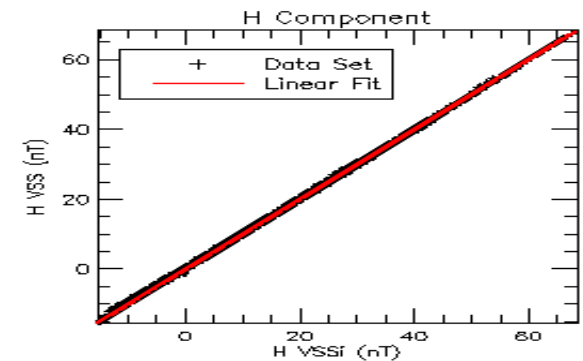
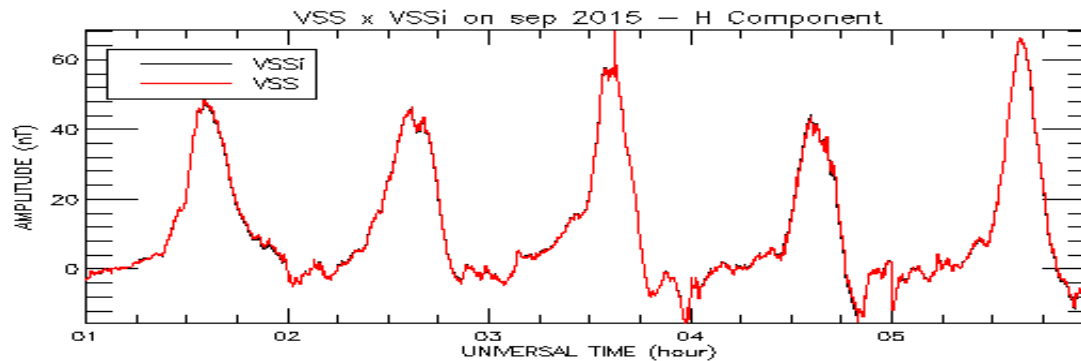
UNIVAP-03 MAN

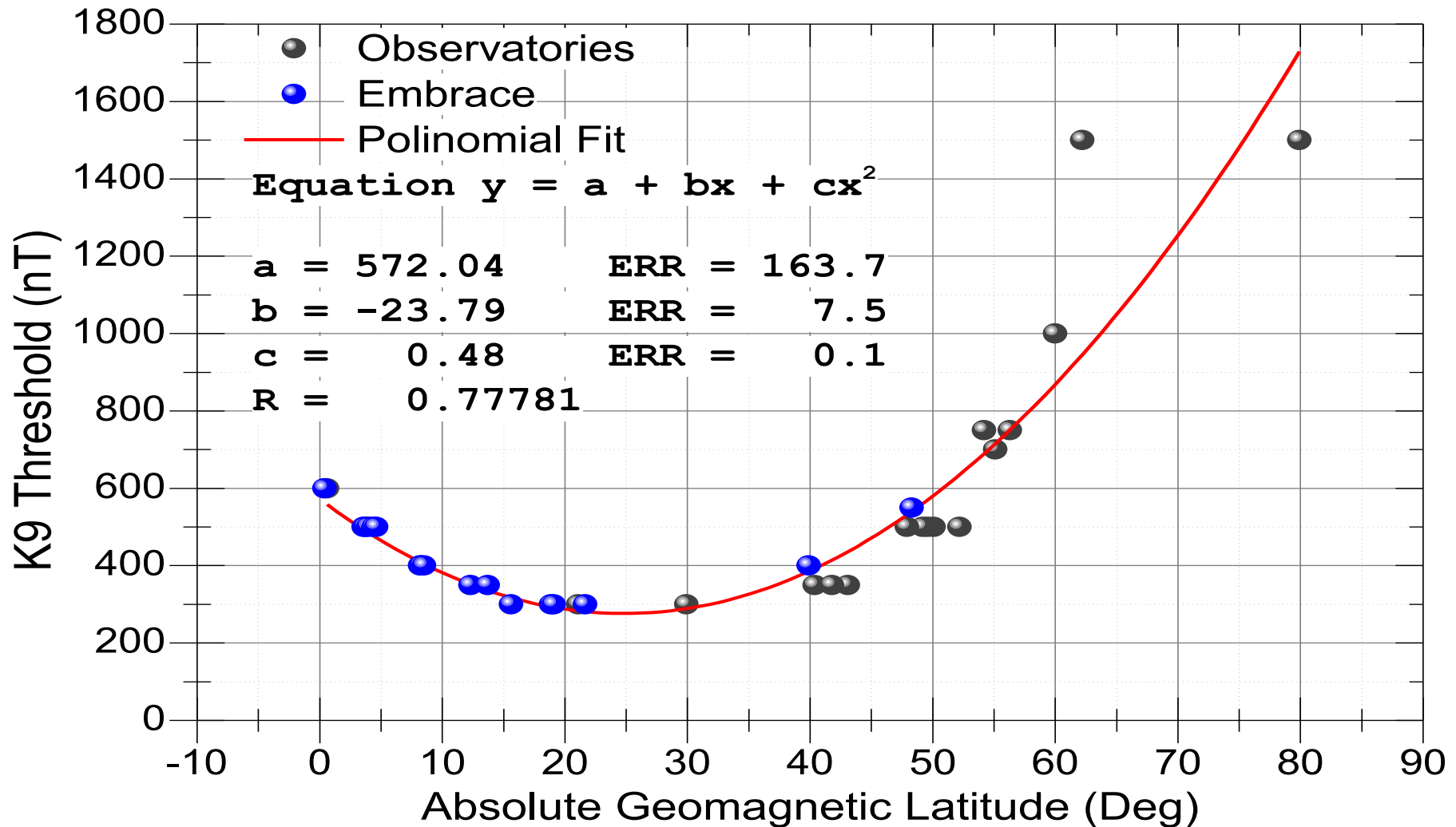


Magnetometer Labels		Maximum error with respect to the reference			
Reference	Under Evaluation	H	D	Z	F
EMBRACE-01	EMBRACE-02	+0.237 %	-0.053 %	+0.112 %	±0.247 %
EMBRACE-01	EMBRACE-03	-0.116 %	+0.001 %	+0.084 %	±0.141 %
EMBRACE-01	EMBRACE-04	-0.252 %	-0.199 %	+0.648 %	±0.637 %
EMBRACE-01	EMBRACE-05	+0.064 %	-0.053 %	+0.088 %	±0.107 %
EMBRACE-05	EMBRACE-06	-0.105 %	-0.015 %	-0.073 %	±0.126 %
EMBRACE-05	EMBRACE-07	-0.028 %	-0.068 %	-0.083 %	±0.078 %
EMBRACE-05	EMBRACE-08	+0.178 %	-0.121 %	-0.103 %	±0.053 %
EMBRACE-05	EMBRACE-09	-0.099 %	+0.089 %	+0.041 %	±0.041 %
EMBRACE-05	UNIVAP-01	-0.863 %	+0.453 %	+0.133 %	±0.705 %
EMBRACE-05	UNIVAP-02	-0.121 %	-0.165 %	-0.141 %	±0.186 %
EMBRACE-05	UNIVAP-03	-0.075 %	-0.002 %	-0.102 %	±0.125 %
Averaged Square Error		±0.194 %	±0.111 %	±0.146 %	±0.222 %

Denardini et al. (2015), Brazilian Journal of Geophysics
"The initial steps for developing the South American k index from the embrace magnetometer network"

Embrace vs Intermagnet





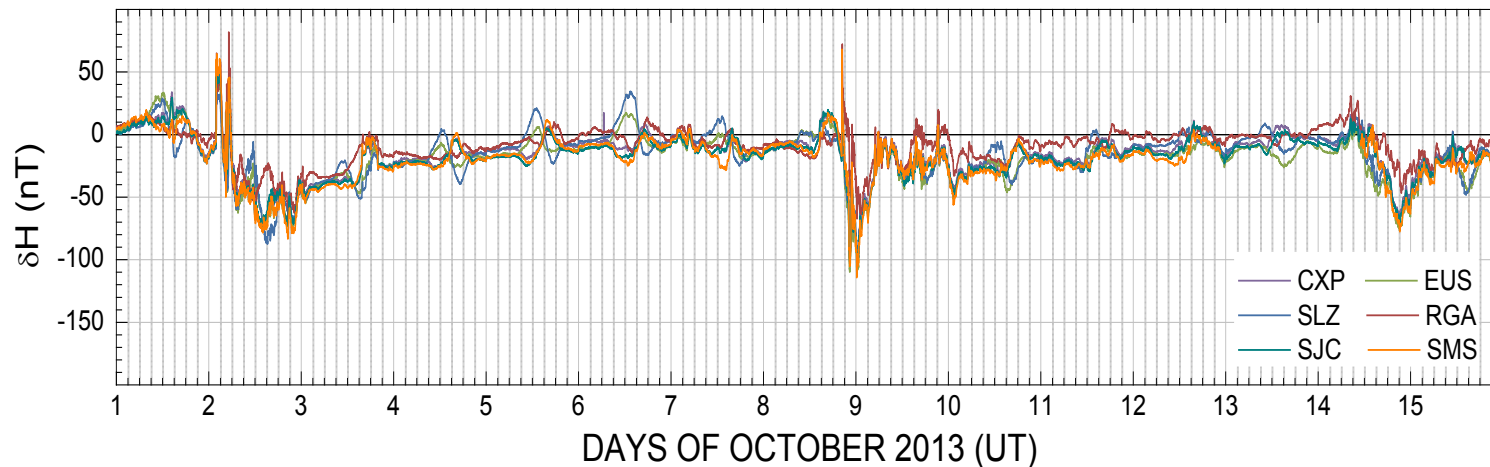
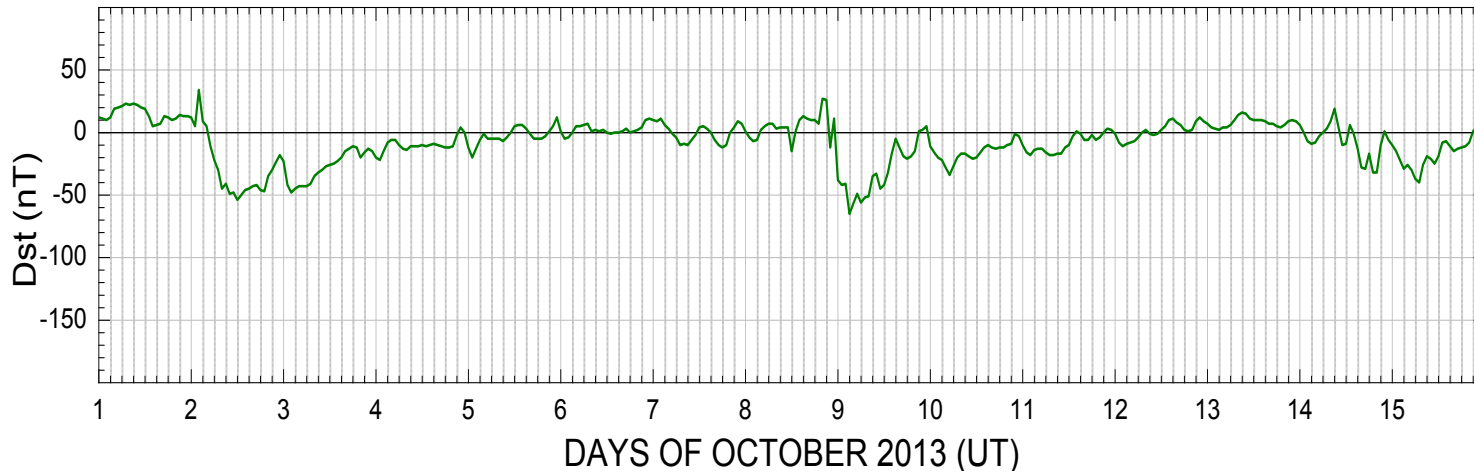
Denardini et al. (2015), Brazilian Journal of Geophysics

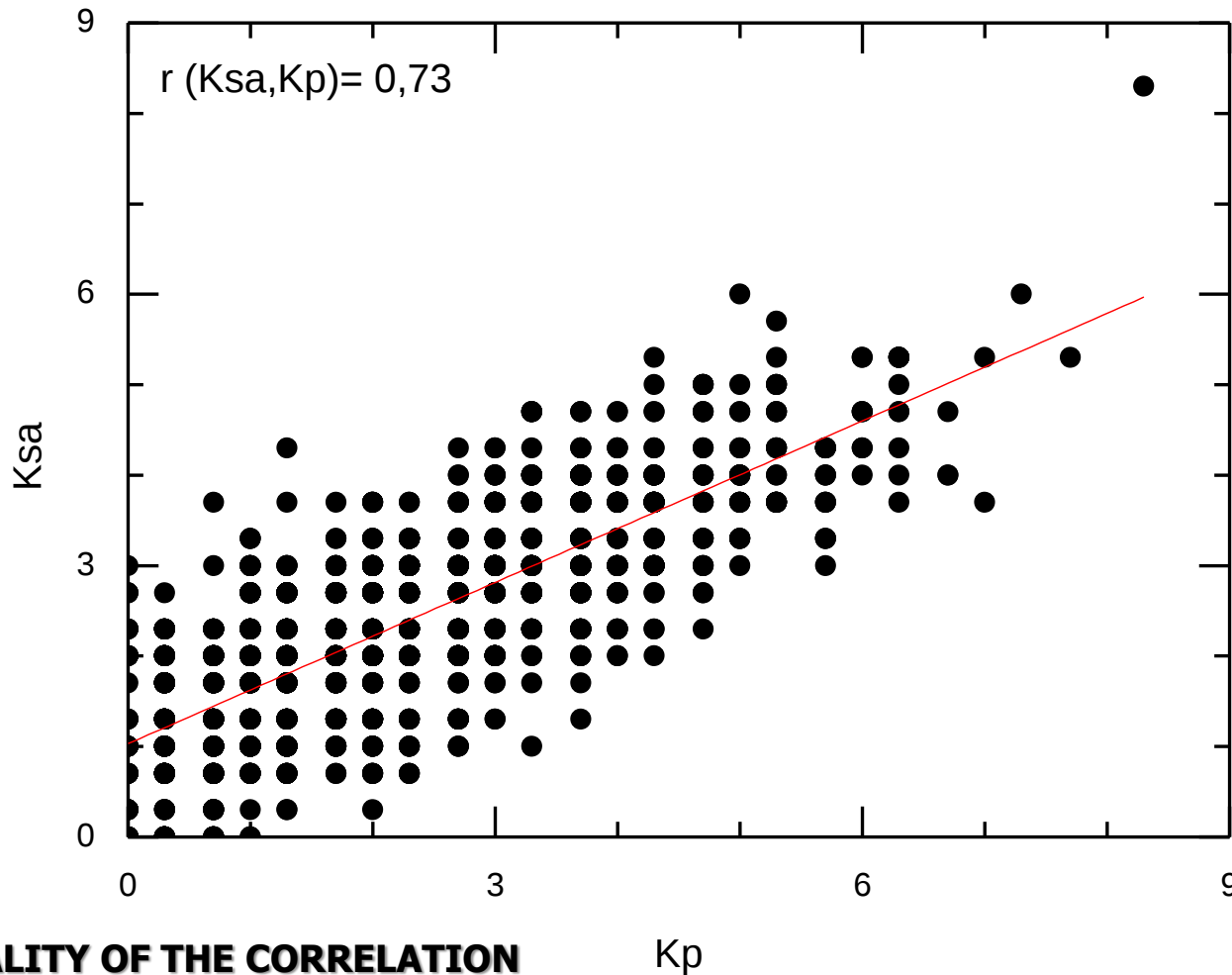
"The initial steps for developing the South American k index from the embrace magnetometer network"

A New Dst Proxy

www.inpe.br/spaceweather

01 to 15 OCT 2013





QUALITY OF THE CORRELATION

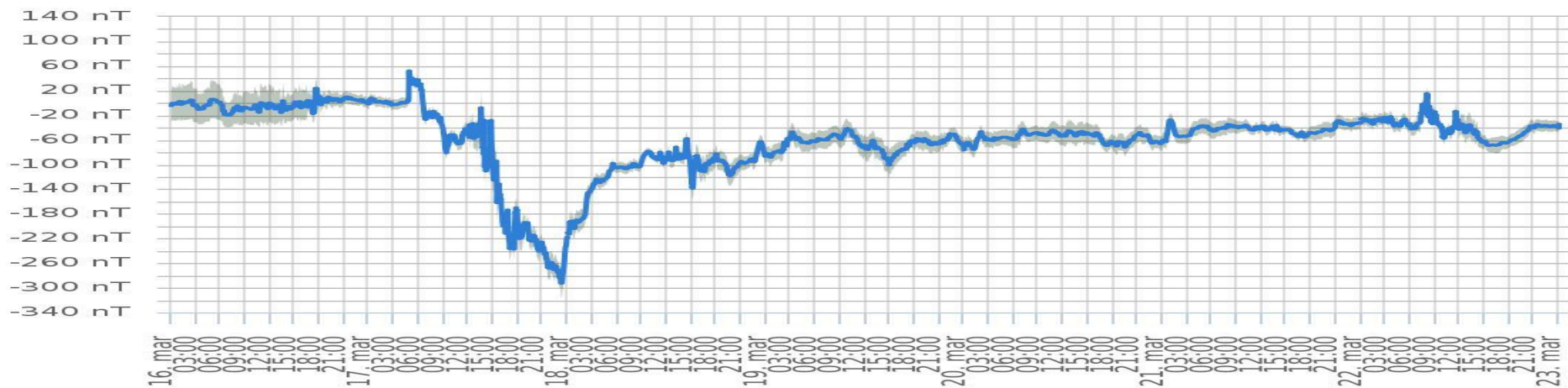
Weak	0.1	0.4
Moderate	0.4	0.7
Strong	0.7	1.0

DANCEY and REIDY (2006).

Storm on March 17 2015

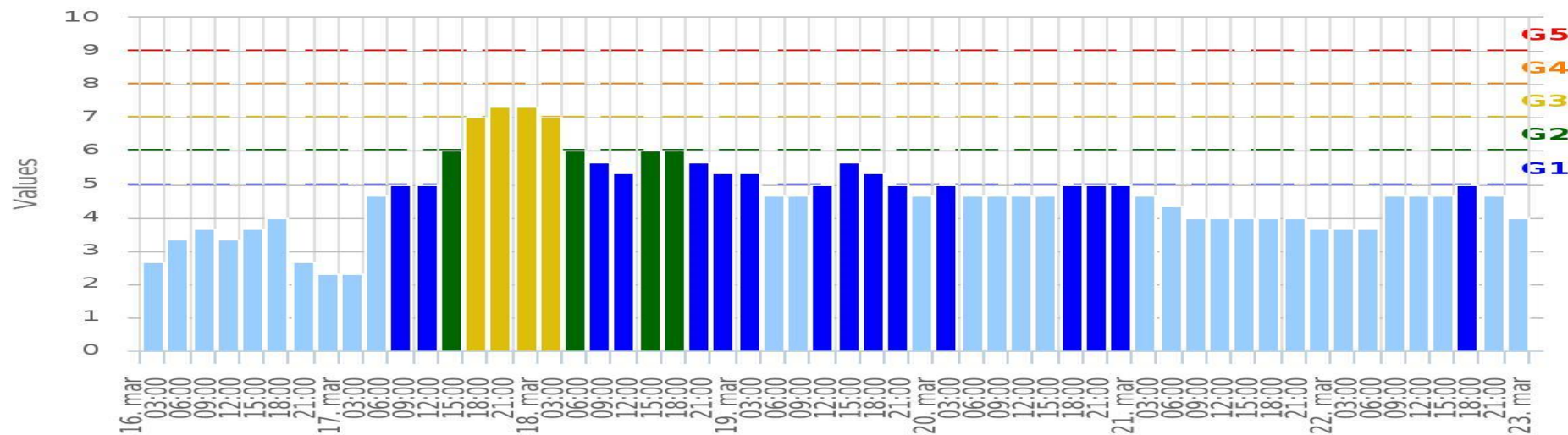
Rede EMBRACE de Magnetômetros

ΔH_{sa} - (16/03/2015 - 22/03/2015)



Rede EMBRACE de Magnetômetros

Índice Ksa - (16/03/2015 - 22/03/2015)



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SINCE JUL 1, 2015

Start here

Participe

ATTENTION

system of the Federal Government. This area is intended for the supply of raw data aggregates exclusively to authorized users. All activities on this system will be carried out under the responsibility of the user. By using this system you agree to this procedure. Any evidence of illegal activities will be reported to the competent authorities. If you do not agree with the above terms, please cancel your connection.

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Login

Password

Login

Register • new password



Registration

Name*

Institute/University*

Department*

Phone number*

E-mail*

Files interest*

Address

Address Number

District Complement

Zip code

City State/Province

Country

Alerts

Alerts interest Alert language

Extra emails +

Email	Delete
Empty	

*Required

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SINCE JUL 1, 2008

DATA Find the product to download



The screenshot shows the EMBRACE data portal interface. At the top, there is a navigation bar with the text "BRASIL Acesso à informação" and links for "Participa", "Serviço", "Legislação", and "Canais". Below this, the main content area is divided into two sections: "MANAGEMENT" and "INSTRUMENTS".

MANAGEMENT section includes:

- Grupos** (Groups): Represented by a square icon with three asterisks (***) and the label "Grupos".
- Atualização** (Update): Represented by a square icon with a circular arrow and the label "Atualização".
- Logout**: Represented by a square icon with a large 'X' and the label "Logout".

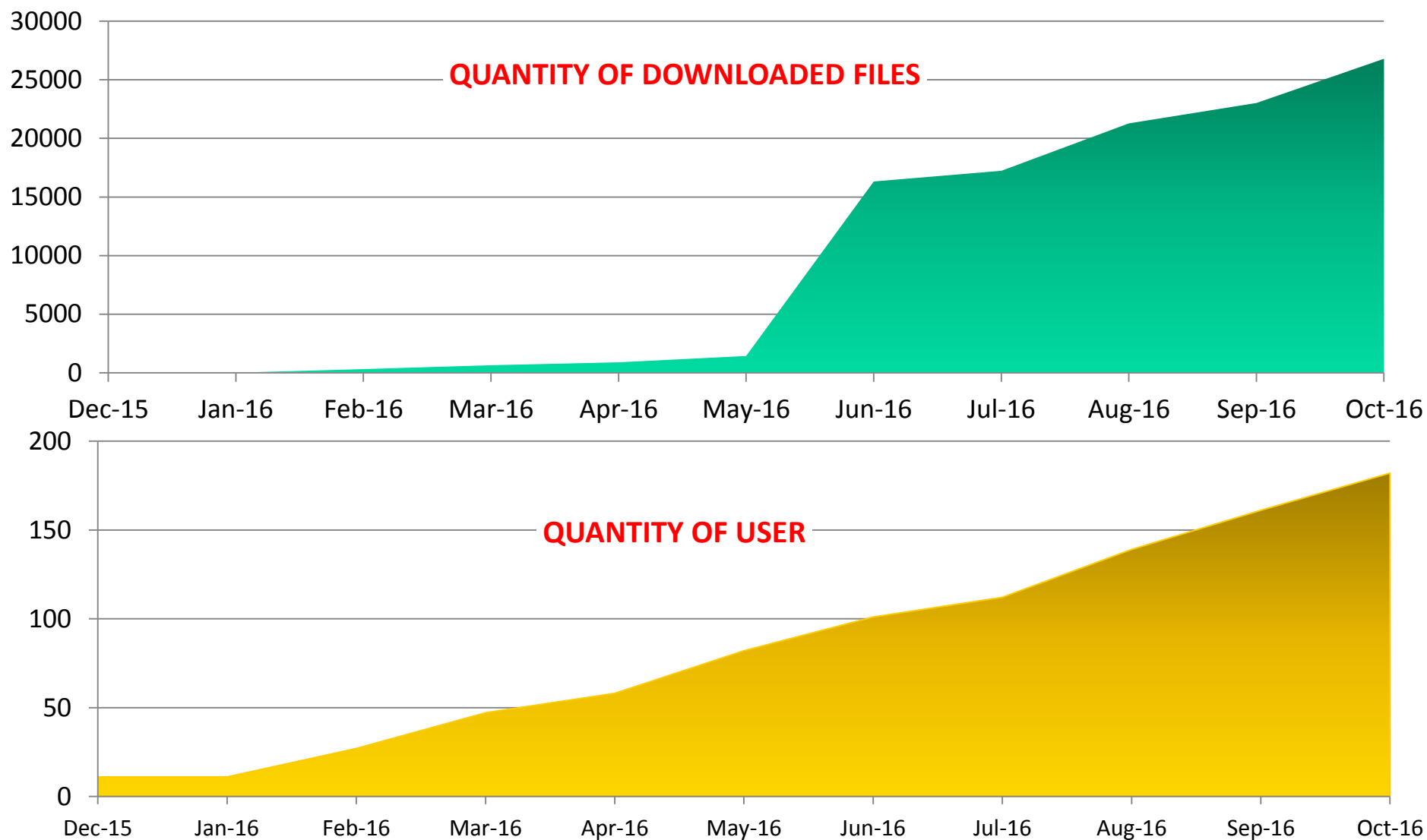
INSTRUMENTS section is divided into two rows of product icons:

- Top Row:**
 - Grupos**: Represented by a square icon with a sun-like symbol and the label "FIS".
 - Scintillation**: Represented by a square icon with a blue gradient and the label "DAT".
 - Magnetometer**: Represented by a square icon with a magnetic field symbol and the label "TXT".
 - Ionosonde**: Represented by a square icon with a graph and the label "GIM no SMO".
- Bottom Row:**
 - Tecno**: Represented by a square icon with a rainbow gradient and the label "DIOHA".
 - IONEX**: Represented by a square icon with a rainbow gradient and the label "IONEX no ABRA".
 - GTEX**: Represented by a square icon with a rainbow gradient and the label "GTEX".
 - Imagem**: Represented by a square icon with a blue circle and the label "TIF".
 - Geis**: Represented by a square icon with a globe and the label "TXT".
 - IRV**: Represented by a square icon with two water droplets and the label "IRV, MET, ZHO, no ZHO".

At the bottom of the interface, there is a footer with the EMBRACE logo, the text "EMBRACE Brazilian Study and Monitoring of Space Weather (INPE/MCTE)", and a copyright notice: "Copyright 2011 © INPE - National Institute for Space Research. All rights reserved." There are also links for "Home", "FAQ", "MSAPI", "Contact", and "About".

QUANTITY OF FILES DOWNLOADED											
MONTH-YEAR	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
TOTAL	21	21	308	645	891	1433	16325	17234	21265	23012	26792
INSTRUMENTS GNSS	Callisto	2	2	2	3	4	4	4	5	6	7
	X-Ray flow	3	3	17	17	17	19	26	2560	2561	2562
	Magnetometer	1	1	248	455	671	1104	15867	17236	18874	18940
	IONEX only	6	6	6	7	9	42	47	55	83	3289
	GTEX only	1	1	1	1	1	5	9	15	15	20
	Wather Vapor	1	1	1	3	3	3	3	3	5	5
	Scintillation	2	2	4	5	7	7	8	8	8	9
	Ionosonde	3	3	27	152	177	219	336	1333	1397	1412
	All-sky Imager	2	2	2	2	2	32	32	49	63	548

QUANTITY OF USER											
MONTH-YEAR	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16
TOTAL	11	11	27	47	58	82	101	112	139	161	182
INSTRUMENTS GNSS	Callisto	1	1	1	2	3	3	4	5	5	6
	X-Ray flow	2	2	4	4	4	6	7	10	11	12
	Magnetometer	1	1	9	23	27	35	43	52	58	63
	IONEX only	2	2	2	3	4	7	10	12	16	20
	GTEX only	1	1	1	1	1	4	7	9	9	13
	Wather Vapor	1	1	1	3	3	3	3	3	5	5
	Scintillation	1	1	3	4	6	6	7	7	7	8
	Ionosonde	1	1	5	6	9	14	18	29	36	39
	All-sky Imager	1	1	1	1	1	6	8	12	14	16



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