

SAO.XML Data Model

with Vary-Chap topside profile



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The logo for the XIV International GIRO Forum (IGF 2014). It features the text "IGF 2014" in a large, bold, blue font. The number "2" is replaced by a stylized globe showing the Americas. The background of the slide is a dark blue gradient with a bright yellow and orange glow on the right side, and a view of the Earth's horizon from space at the bottom.

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SAO.XML Data Model

- Why XML?
 - Data format engineered for long-term archival of science data
 - Self-descriptive storage
 - Understandable without metadata documentation
- Why SAO.XML 5?
 - Standard accepted by URSI for data exchange in 2005
- Why we need convincing?
 - Software development is required
 - XML still looks different from text columns

```

5 1 77 49 20 2 23 0 23 23 23 0 0 0 0 0 0 0 0 0 0 0 0
120 2 25 25 25 25 0 0 0 0 60 60 60 49 49 0 0 0 0 0 0 0 0
1.359 80.310 66.980309.060117.000
DGS-256 /SMJ67, NAME SONDESTROM, WMOID HIGL5 BTGS 04231, ARTIST 0:
FE200003202010000050003200000519320000005000000831000011611E06741D7:
3.5009999.000 3.214 11.249 .800 3.200 1.3009999.000999
9999.000 35.0009999.000 .0009999.000 3.750 1.1009999.000306
9999.000 294.8009999.000 255.382 4.821 .800 56.9209999.000
9999.0009999.0009999.0009999.000
2 2 0 0 6 0 0 0 051 0 0 0 0 5 0 0 0 1 0
-1.563 1.563
280.000 275.000 265.000 265.000 260.000 260.000 260.000 270.000 2:
285.000 290.000 295.000 305.000 320.000 345.000 390.000 500.000
118126118130126134126130130130130134130130130126 0 0126126122118:
00000000000000009910010
1.300 1.400 1.500 1.600 1.700 1.800 1.900 2.000
2.800 2.900 3.000 3.100 3.200 3.300 3.400 3.500
.545000E+0 .350000E+1 .294800E+3 .000000E+0-.927000E+2 .200000E+2-
.200000E+0 .545000E+0 .110000E+3 .000000E+0-.230000E+2 .480000E+1-
.646001100000E+04 .648000000000E+04 -.130259753808E+13 .40:
.651300000000E+04 .651300000000E+04 -.399079983437E+12 .12:
.651403300000E+04 .651403300000E+04 .368397227135E+13 -.11:
.654806700000E+04 .654806700000E+04 .000000000000E+00 .25:
.655000000000E+04 .655000000000E+04 -.687861455393E+12 .20:
.657900000000E+04 .657900000000E+04 .212236134121E+12 -.64:
.658100000000E+04 .658100000000E+04 -.523798046757E+12 .15:
.658400000000E+04 .658400000000E+04 .986520422670E+13 -.29:
.658700000000E+04 .658700000000E+04 -.142387559063E+13 .43:
.660700000000E+04 .660700000000E+04 .193124616662E+13 -.58:
.661600000000E+04 .661600000000E+04 .953051939381E+13 -.28:
.662600000000E+04 .662600000000E+04 .392662278959E+14 -.11:
.663600000000E+04 .663600000000E+04 -.405117588847E+14 .12:
.666480000000E+04 .666480000000E+04 -.519788209467E+13 .15:
.637000000000E+04
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.102100E+3 .345000E+0
91.250 105.000 105.000 105.000 105.000 105.000 105.000 105.000 16
105.000 105.000 105.000 105.000 106.250 106.250 106.250 106.250 16
0110106114114 0 0 0 0 0122122 0130130126126126126130130 0
901109999900901101009900
.800 .900 1.000 1.100 1.200 1.300 1.400 1.500
2.300 2.400 2.500 2.600 2.700 2.800 2.900 3.000
91.300 100.000 110.000 120.000 130.000 140.000 144.033 150.000 16
212.100 220.000 230.000 240.000 250.000 260.000 270.000 280.000 29
350.000 360.000 370.000 380.000 390.000 400.000 410.000 420.000 4:
500.000 510.000 520.000 530.000 540.000 550.000 560.000 570.000 58
.200 .472 .545 .524 .456 .308 .200 .200

```

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http://ulcar.uml.edu/SAOXML/SAOXML-5.0.1 One Record.xr

Most Visited ABBYY Lingvo Dictionary.com

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<URSI ID="03" Name="M(3000)F2" Val="2.919"/>
<URSI ID="07" Name="MUF(3000)" Val="31.241" Units="MHz"/>
<URSI ID="42" Name="fmin" Val="1.7" Units="MHz" Flag="edited"/>
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<Modeled Name="foF2p" Val="9.53" Units="MHz" ModelName="URSI-88"
ModelOptions="NoStorm"/>
<Custom Name="Delta-foF2" Units="MHz" Val="0.07" Description="Correction to foF2 from
profile inversion algorithm"/>
</CharacteristicList>
- <TraceList Num="2">
- <Trace Type="standard" Layer="F2" Polarization="O" Num="76">
+ <FrequencyList Type="float" SigFig="5" Units="MHz" Description="Nominal Frequency">
</FrequencyList>
- <RangeList Type="float" SigFig="4" Units="km" Description="Group Range">
206.04 204.2 202.36 202.36 204.2 209.72 217.08 224.44 231.8 235.48 241.0 246.52 252.04
255.72 259.4 261.24 263.08 268.6 270.44 272.28 275.96 275.96 279.64 285.16 288.84
292.52 294.36 298.04 301.72 303.56 305.4 309.08 310.92 316.44 318.28 320.12 323.8 323.8
333.5 335.5 338.0 340.5 343.5 344.5 346.5 349.0 352.0 354.0 357.0 361.0 364.0 367.0 370.0
374.0 381.0 384.0 387.0 391.0 394.0 398.0 402.0 406.0 410.0 414.0 419.0 424.0 430.0 434.2
445.24 458.12 469.16 483.88 502.28 524.36 579.56 655.0
</RangeList>
+ <TraceValueList Name="Amplitude" Type="integer" SigFig="3" Units="dB" NoValue="0"
Description="Relative Amplitude"></TraceValueList>
+ <TraceValueList Name="DopplerShift" Type="float" SigFig="4" Units="Hz" NoValue="99.0"
Description="Doppler Frequency Shift"></TraceValueList>
</Trace>
+ <Trace Type="standard" Layer="E" Polarization="O" Num="22"></Trace>

```

Done

Status of SAO.XML

Component	Prototyped	Released	Deployed
Data Model & Data Format	√	√	WWW
Schema	√	√	WWW
White Paper	√	√	WWW
Fortran R/W Library	√	√	WWW
URSI Standard	√	√	WWW
ARTIST	√	ARTIST 5.0.2.32	Most locations
SAO Explorer	√	SAOX 3.4.11+	√
Dissemination	√	Dispatcher	√ DIDBase
User Applications	In progress	In Progress	RSA, AFWA

Proposal for Vary-Chap Model

in SAO.XML <TopsideVaryChap> element

MODELED

- Alpha
 - Alpha0
 - Alpha1
 - Theta
- TransitionHeight
 - HT0
 - HT1
 - HT2
 - Nu
- Thickness
 - Beta0
 - Beta1
- Intermediate
 - C1
 - C2
 - ZT

MEASURED

- PeakHeight
- PeakDensity
- PeakScaleHeight

ATTRIBUTES

- GEO Latitude
- Season
- Local Time

Example SAO.XML with VaryChap Model

```
<TopsideVaryChap>
<VaryChap_Modeled>
<VaryChap_Alpha Value="43.55" Alpha0="2.00" Alpha1="0.45" Theta="0.90" />
<VaryChap_TransitionHeight Value="307.2" HT0="46.5" HT1="10.0" HT2="700"
Nu="0.009" />
<VaryChap_Beta Value="134.2" Beta0="-34.34" Beta1="0.234" />
<VaryChap_Intermediate C1="0.3484" C2="3.4836" ZT="0.93"/>
</VaryChap_Modeled>
<VaryChap_Measured PeakHeight="241.118" PeakDensity="697890.8"
PeakScaleHeight="27.49" />
<VaryChap_Attributes GEO-lat="62.3" Season="2" LT="20.12" />
</TopsideVaryChap>
```

Dalu

감사합니다

Gracias Danke Ευχαριστίες

THANK YOU

Obrigado

Köszönöm

Tack Grazie Спасибо Dank 谢谢 Merci

ありがとう

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