SINEX Extension: More Flexible Parameterizations

PROPOSAL 2

(January 31, 2008)

New Definition of 6-Character Parameter Codes:

Character 1-3: Parameter group (station coordinates, pole, UT/LOD, nutation, troposphere, satellite orbits, radio sources, geocenter coordinates, potential coefficients, biases, antennas, …)

Character 4: Distinction of the component
(e.g. x/y/z, north/east/up, right ascension/declination, cosine/sine, ...)

Character 5: Distinction between different parameter representations
_ = Constant parameter over the time interval considered
V = Vertices (offsets) of a piece-wise linear continuous representation
S = Spline representation …
F = Filter value

Character 6: Distinction between offsets and rates (could be extended, if necessary)
0 = Offset
1 = Rate

Parameter Type	*Old name*	*Char. 1-3*	*Char. 4*	*Char. 5*	*Char. 6*	*New name (example)*
Station X coordinate	STAX	STA	X	_ / V / S	0	STAX_0
Station Y coordinate	STAY		Y		0	STAY_0
Station Z coordinate	STAZ		Z		0	STAZ_0
Station X velocity	VELX		X		1	STAX_1
Station Y velocity	VELY		Y		1	STAY_1
Station Z velocity	VELZ		Z		1	STAZ_1
Geocenter X coordinate	XGC	GEO	X		0	GEOX_0
Geocenter Y coordinate	YGC		Y		0	GEOY_0
Geocenter Z coordinate	ZGC		Z		0	GEOZ_0
Radio source right	RS_RA	RDS	R		0	RDSR_0
Radio source declination	RS_DE		D		0	RDSD_0
Radio source right	RS_RAR		R		1	RDSR_1
Radio source declination	RS_DER		D		1	RDSD_1
Radio source parallax	RS_PL		P		0	RDSP_0
Delta time UT1-TAI	UT1	UT1	_		0	UT1__0
UT1 rate (- Length of day)	LOD (minus)		_		1	UT1__1
X polar motion	XPO	POL	X		0	POLX_0

Parameter Type	*Old name*	*Char. 1-3*	*Char. 4*	*Char. 5*	*Char. 6*	*New name (example)*
Y polar motion	YPO		Y		0	POLY_0
X polar motion rate	XPOR		X		1	POLX_1
Y polar motion rate	YPOR		Y		1	POLY_1
Nutation in longitude	NUT_LN	NUT	L		0	NUTL_0
Nutation in obliquity	NUT_OB		O		0	NUTO_0
Nutation rate in longitude	NUTRLN		L		1	NUTL_1
Nutation rate in obliquity	NUTROB		O		1	NUTO_1
Nutation angle X	NUT_X		X		0	NUTX_0
Nutation angle Y	NUT_Y		Y		0	NUTY_0
Rate for nutation angle X	NUTR_X		X		1	NUTX_1
Rate for nutation angle Y	NUTR_Y		Y		1	NUTY_1
Satellite X coordinate	SAT__X	SAT	X		0	SATX_0
Satellite Y coordinate	SAT__Y		Y		0	SATY_0
Satellite Z coordinate	SAT__Z		Z		0	SATZ_0
Satellite X velocity	SAT_VX		X		1	SATX_1
Satellite Y velocity	SAT_VY		Y		1	SATY_1
Satellite Z velocity	SAT_VZ		Z		1	SATZ_1
Radiation pressure	SAT_RP		P		0	SATP_0
GX scale	SAT_GX		1		0	SAT1_0
GZ scale	SAT_GZ		2		0	SAT2_0
GY bias	SATYBI		B		0	SATB_0
Troposphere zenith delay	TROTOT	TRO	Z		0	TROZ_0
Troposphere gradient north	TGNTOT		N		0	TRON_0
Troposphere gradient east	TGETOT		E		0	TROE_0
Troposphere zenith delay	TRODRY	TRD	Z		0	TRDZ_1
Troposphere gradient north	TGNDRY		N		0	TRDN_0
Troposphere gradient east	TGEDRY		E		0	TRDE_0
Troposphere zenith delay	TROWET	TRW	Z		0	TRWZ_0
Troposphere gradient north	TGNWET		N		0	TRWN_0
Troposphere gradient east	TGEWET		E		0	TRWE_0
Range bias	RBIAS	BIA	R		0	BIAR_0
Time bias	TBIAS		T		0	BIAT_0
Scale bias	SBIAS		S		0	BIAS_0
Troposphere bias at zenith	ZBIAS		Z		0	BIAZ_0
VLBI antenna axis offset	AXI_OF	ANT	O		0	ANTO_0

Parameter Type	*Old name*	*Char. 1-3*	*Char. 4*	*Char. 5*	*Char. 6*	*New name (example)*
Satellite antenna X offset	SATA_X		X		0	ANTX_0
Satellite antenna Y offset	SATA_Y		Y		0	ANTY_0
Satellite antenna Z offset	SATA_Z		Z		0	ANTZ_0
Spherical harmonic	CN	POT	C		0	POTC_0
Spherical harmonic	SN		S		0	POTS_0

Remarks:

- This proposal is not just an addition to already existing parameter types. It is a more consistent nomenclature for the future. The old parameter types could be kept during a long transition period, if needed for backward compatibility.
- Using character 6, offsets as well as rates (and more) can be genericly defined for all parameter groups given above, even if they are not explicitly listed (e.g. for troposphere parameters).
- Using character 5 different parameterizations become possible for all the various parameter groups, even if they are not explicitly listed above.
- The availability of a more flexible and more generic naming convention for parameters does not mean that all these possibilities will be used. The Services will have to agree on which parameter types are allowed in the SINEX files of the official Service solutions.
- In the new version of SINEX only the new names will be allowed. Which naming convention to follow will therefore be depending on the SINEX version number.
- In the new SINEX description a translation table will be given containing the old and new parameter types.
- LOD should be reported now as –d(UT1)/dt, as the negative rate of UT1-TAI (name UT1__1). In general, UT1-TAI should be given and not UT1-UTC. This helps to avoid the problems with leap seconds. Some analysis centers use UT1-TAI since a long time.