

A note on frame transformations with applications to geodetic datums

Tomás Soler · John Marshall

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The right expression for Eq. (10) is as follows:

$$\begin{aligned} \{v_x\}_{ITRF_{yy}} = & \{\dot{T}_x\} + [(1 + s(t_k)) \underline{\dot{e}}]^t + \dot{s} [\delta \mathfrak{R}] \{x(t)\}_{ITRF00} + [(1 + s(t_k)) [\delta \mathfrak{R}] + (2t_D - (t_k + t))] \\ & \times [(1 + s(t_k)) \underline{\dot{e}}]^t + \dot{s} [\delta \mathfrak{R}] \{v_x\}_{ITRF00} + \dot{s} \underline{\dot{e}}^t \{2(t_D - t_k) \{x(t)\}_{ITRF00} \\ & + (3t_D^2 + t_k^2 - 4t_D t_k + 2t(t_k - t_D)) \{v_x\}_{ITRF00}\} \end{aligned} \quad (10)$$

The previously published Table 2 was not properly aligned and contained some errors. Replace Table 2 by the following table:

Table 2
Transformation parameters and their rates from ITRF00 to other frames

ITRF00 →		NAD83 $t_k=1997.0$	ITRF89 $t_k=1988.0$	ITRF92 $t_k=1988.0$	ITRF94 $t_k=1997.0$
T_x	cm	99.56	2.97	1.47	0.67
T_y	cm	-190.13	4.75	1.35	0.61
T_z	cm	-52.15	-7.39	-1.39	-1.85
e_x	mas	25.915	0.00	0.00	0.00
e_y	mas	9.426	0.00	0.00	0.00
e_z	mas	11.599	0.18	0.18	0.00
s	ppb	0.62	5.85	0.75	1.55
\dot{T}_x	cm/y	0.07	0.00	0.00	0.00
\dot{T}_y	cm/y	-0.07	-0.06	-0.06	-0.06
\dot{T}_z	cm/y	0.05	-0.14	-0.14	-0.14
\dot{e}_x	mas/y	0.013	0.00	0.00	0.00
\dot{e}_y	mas/y	-0.015	0.00	0.00	0.00
\dot{e}_z	mas/y	-0.020	-0.02	-0.02	-0.02
\dot{s}	ppb/y	-0.18	0.01	0.01	0.01

Note: All rotations are given counter-clockwise positive; mas = milliarc second; ppb = parts per billion = 10^{-6} ppm

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T. Soler (✉) · J. Marshall
National Geodetic Survey, NOS NOAA,
N/NGS22 #8825, 1315 East-West Highway,
Silver Spring, MD 20910-3282, USA
Tel.: +1-301-7133205
Fax: +1-301-7134324
E-mail: Tom.Soler@noaa.gov

The following two equations should be replaced in Appendix B.

$$\begin{aligned}\partial\mathcal{A}/\partial\{\varepsilon(t_k)\} &= \partial[\partial\varepsilon]/\partial t_D \\ &= (1 + s(t_k)) \underline{[v_x]} \\ &\quad + \dot{s} \underline{[[x] + (2t_D - (t_k + t)) [v_x]]} \\ &= [\bar{\partial}\varepsilon]\end{aligned}$$

$$\begin{aligned}\partial\mathcal{A}/\partial\{\dot{\varepsilon}\} &= \partial[\partial\dot{\varepsilon}]/\partial t_D \\ &= (1 + s(t_k)) \underline{[[x] + (2t_D - (t_k - t)) [v_x]]} \\ &\quad + \dot{s} \underline{[2(t_D - t_k) [x] + (3t_D^2 + t_k^2 - 4t_D t_k} \\ &\quad + 2t(t_k - t_D)) \underline{[v_x]]} = [\bar{\partial}\dot{\varepsilon}]\end{aligned}$$