

## International Terrestrial Reference Frame

**Responsible Organization:** [International Earth Rotation and Reference Systems Service \(IERS\)](#)

**Abbreviated Frame Name:** [ITRF](#)

**Associated TRS:** [ITRS](#)

**Coverage of Frame:** [Global](#)

**Type of Frame:** [3-Dimensional](#)

**Last Version:** [ITRF2008](#)

### **Brief Description**

The ITRF2008 is the current realization of the ITRS obtained by combination of VLBI, SLR, GPS and DORIS time series of station positions and Earth Orientation Parameters provided by the IAG Services (IVS, ILRS, IGS, IDS), together with local ties in co-location sites. The ITRF2008 is published by the ITRS product center of the IERS

### **Definition of Frame**

- **Origin:** Zero translation and translation rate with respect to SLR long-term solution used in the ITRF2008 combination
- **Scale:** Zero scale and scale rate with respect to the mean scale of VLBI and SLR long-term solutions used in the ITRF2008 combination.
- **Orientation:** Zero rotation and rotation rate with respect to ITRF2005.
- **Time Evolution:** Zero rotation rate with respect to ITRF2005.

**Coordinate System:** [Cartesian coordinates \(X, Y, Z\)](#)

### **References:**

- [http://itrf.ensg.ign.fr/ITRF\\_solutions/2008/ITRF2008.php](http://itrf.ensg.ign.fr/ITRF_solutions/2008/ITRF2008.php)

## Transformation Parameters

Transformation parameters from ITRF2008 to past ITRFs. “ppb” refers to parts per billion (or  $10^{-9}$ ). The units for rate are understood to be “per year.”

ITRF Solution	Tx (mm)	Ty (mm)	Tz (mm)	D (ppb)	Rx (mas)	Ry (mas)	Rz (mas)	Epoch
ITRF2005	-2.0	-0.9	-4.7	0.94	0.00	0.00	0.00	2000.0
rates	0.3	0.0	0.0	0.00	0.00	0.00	0.00	
ITRF2000	-1.9	-1.7	-10.5	1.34	0.00	0.00	0.00	2000.0
rates	0.1	0.1	-1.8	0.08	0.00	0.00	0.00	
ITRF97	4.8	2.6	-33.2	2.92	0.00	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	
ITRF96	4.8	2.6	-33.2	2.92	0.00	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	
ITRF94	4.8	2.6	-33.2	2.92	0.00	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	
ITRF93	-24.0	2.4	-38.6	3.41	-1.71	-1.48	-0.30	2000.0
rates	-2.8	-0.1	-2.4	0.09	-0.11	-0.19	0.07	
ITRF92	12.8	4.6	-41.2	2.21	0.00	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	
ITRF91	24.8	18.6	-47.2	3.61	0.00	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	
ITRF90	22.8	14.6	-63.2	3.91	0.00	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	
ITRF89	27.8	38.6	-101.2	7.31	0.00	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	
ITRF88	22.8	2.6	-125.2	10.41	0.10	0.00	0.06	2000.0
rates	0.1	-0.5	-3.2	0.09	0.00	0.00	0.02	