

# Reference Frame Working Group

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# Overview of the Working Group Charter

- **“Generate the official IGS station coordinates, velocities and Earth rotation parameters”**
  - Combination of daily AC SINEX solutions → daily IGS combined SINEX solutions
  - Accumulation of daily IGS combined SINEX solutions → IGS cumulative solution (long-term station coordinates)
- **“Specify the successive IGS Reference Frames”**
  - e.g., IGS14 (adopted 2017-01-29), IGb14 (adopted 2020-05-17), IGSR3 (specific RF for IGS repro3)
  - IGS20 (adopted 2022-11-27)
- **“Collaborate with the IGS AWG in updating estimates of the satellite antenna offsets”**
  - e.g., igs14.atx (based on ITRF2014 scale), igsR3.atx (based on calibrated Galileo satellite z-PCOs)
  - igs20.atx (based on ITRF2020 scale)
- **“Contribute to the ITRF by providing the official IGS submission for the ITRF updates”**
  - Combination of daily AC SINEX solutions from the successive IGS reprocessing campaigns

# Progress since IGS 2022 Virtual Workshop

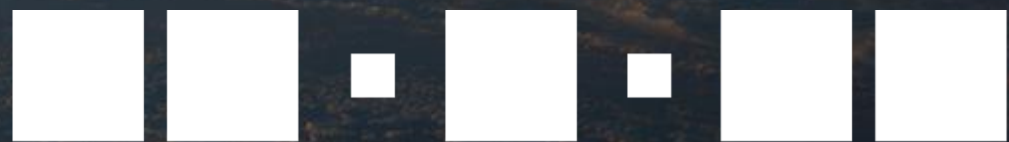
- **“Finalize and publish IGS20/igs20.atx by July 22, 2022”**
  - IGS20/igs20.atx published on July 26, 2022 [IGSMAIL-8238]
- **“Transition of the IGS products to IGS20/igs20.atx and the repro3 standards (and long file names) with trial period August-September 2022, and the final switch October 2022 ”**
  - Trial period started on August 7
  - Trial period extended until November 26 to allow additional time to prepare for the switch [IGSMAIL-8256]
  - Switch of IGS products to IGS20/igs20.atx, repro3 standards and long file names happened (smoothly?) on November 27
- **First release of new IGS cumulative solution (compliant with IGS20/igs20.atx and repro3 standards) on December 1 [IGSMAIL-8284]**
  - Based on currently available repro3 product series (January 2, 1994 – December 31, 2020)
  - Weekly updates of IGS cumulative solution temporarily halted

# Future Work (Short Term)

- **Backfill repro3 product series until November 26, 2022**
  - AC contributions expected by end of January
  - Daily combined SINEX solutions will follow shortly
  
- **Resume updates of IGS cumulative solution**
  - Based on complete up-to-date series of solutions compliant with IGS20/igs20.atx and repro3 standards
  - Updates expected to resume in February 2023
  
- **Which update rate for the IGS cumulative solution?**
  - Are there usages which really require **weekly** updates?
  - Which update rate would satisfy your needs? Every month? Every 2 months?

## Future Work (Longer Term)

- **“Understand higher precision of TUG station position estimates compared to other ACs.”**
- **“Aim at further reducing spurious periodic signals in IGS station position time series, by further advances in orbit and tide modelling.”**
- **“Investigate terrestrial scale [rate] differences between GNSS and the other space geodetic techniques.”**
- **“Aim at mitigating the impact of offsets on the long-term stability of the ITRF by:**
  - Investigating in situ antenna calibrations, either absolute or relative;
  - Considering next generation of station installations, less subject to environmental errors;
  - Limiting equipment changes at RF stations.”



IGS

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**Thank You!**

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