

v1 09 September 2012

**PROPOSED RECOMMENDATION CCTF NNN (2012):  
Development of continental-scale fibre optical time and frequency transfer networks and support to studies of improved methods for intercontinental comparisons**

The Consultative Committee for Time and Frequency (CCTF),

**considering**

- the continuing reduction in uncertainties and instabilities of frequency standards developed in institutes around the world, in particular of standards based on optical atomic transitions,
- the need for regular comparisons between these standards, as an essential part of the preparation for a redefinition of the second and for other applications such as contributions to time scales,
- that the stabilities of the time and frequency transfer techniques currently used for long-distance comparisons around the world, GNSS and TWSTFT, are insufficient for the needs of comparisons between the new frequency standards,
- the demonstrated capability of fibre optical links to realise frequency comparisons with the stability required for the new frequency standards, over distances of up to the order of 1000 km,
- the existence of research projects concerning satellite-based time and frequency transfer methods with the potential to significantly improve intercontinental comparisons;

**recommends that**

- metrology institutes vigorously pursue the development of continental-scale fibre optical time and frequency transfer networks,
- research aimed at significantly improving time and frequency transfer over intercontinental distances be actively encouraged and supported, and
- national governments, metrology institutes, optical fibre network providers and operators, space agencies and other relevant bodies consult and coordinate with each other on access to the necessary infrastructures and on possible synergies with other applications of these infrastructures.
- *and a point on funding by governments, national and international bodies?*