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Status of ESA's independent Earth Orientation Parameter products

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The availability of highly accurate, up-to-date Earth Orientation Parameters is of major importance for all positioning and navigation applications on Earth, Sea, Air and also in Space. This is equally true for ESA missions and the EU space programs, e.g. Galileo, EGNOS and Copernicus.

In the frame of its responsibility to provide the Geodetic reference for ESA missions, ESA's Navigation Support Office at ESOC is already contributing to the realisation of the International Terrestrial Reference Frame (ITRF) and the combined Earth Orientation Parameters provided by the International Earth Rotation Service (IERS). The contribution is realised through individual contributions to international services such as the International GNSS Service (IGS), the International Laser Ranging Services (ILRS), the International DORIS Service (IDS), the International Earth Rotation Service (IERS) and in the future also to the International VLBI Service (IVS).

For the combination and the long-term predictions of the Earth orientation products ESA is still relying on the International Earth Rotation Service (IERS). Over the past years, ESA repeatedly experienced problems with outdated or missing predictions of the Earth orientation parameters (Bulletin A). Considering the importance of up-to-date Earth orientation parameters, the dependence on a single source outside Europe is considered a risk for European industry, for ESA missions and for EU programmes. For this reason, ESA initiated in 2017 a study with the target to develop independent ESA Earth Orientation parameter products. This study, executed by a consortium led by the Deutsches Geodätisches Forschungsinstitut (DGFI-TUM), is expected to finish in the course of this year.

In this presentation we will give an overview of ESAs up-to-date reference products and discuss their quality. It will outline the combination approach and discuss the way forward to an fully operational provision of the ESA Earth Orientation Parameter products.