The Reference picture.JPG consists in the overlay of 7 pictures corresponding to the periods of image acquisition (i.e. between deployment and recovery of the TEMPO ecological module) overlaid onto each other after homography transformation. The scale corresponds to 0.6478 mm/pixel.

1. **Folder « Raw pictures »**

This folder contains all the screenshots extracted from video sequences retrieved by the TEMPO ecological module (EMSO-Azores observatory). Screenshots were retrieved at around 5 seconds of each video sequence if the image was not blurry. In any case, the image’s upper-left corner also holds the date [YYYY-MM-DD] and exact UTC time at which the screenshot was taken [HH:MM:SS]. All pictures are systematically named with the following code referring to temporal metadata within the TEMPO image time series:

e.g. 20120727\_180008\_2012-2013\_20\_1130

* + 20120727 = date (yyyymmdd)
  + 180008 = time (hhmmss)
  + 2012-2013 = period of image acquisition
  + 20 = image number within the period image series
  + 1130 = image number since the first image taken in 2012

**Folder « Transformation matrices »**

* 1. **Final**

This folder contains the final transformation matrices computed from the combination of both “interperiod” and “intraperiod” homography matrices using the following command line on Python *M\_final = M\_interperiod.dot(M\_intraperiod)*. For further information on these 3x3 matrices, please consult the literature.

* 1. **Interperiod**

This folder contains transformation matrices computed using a combination of manual keypoints and keypoints detected with the SURF algorithm (v.4.1.2.30, OpenCV library; Hessian threshold = 1000, RANSAC parameters used to extract features between pairs of periods = [20 (2012-2013/2013-2014), 20 (2013-2014/2014-2015), 100 (2014-2015/2015-2016), 50 (2015-2016/2016-2017), 50 (2016-2017/2017-2018), 50 (2017-2018/2018-2019]) applied on CLAHE-enhanced pictures. Importantly these transformation matrices also accounted for translation into the new image coordinate system shared among the full image time series (Reference picture.jpg).

* 1. **Intraperiod**

This folder contains homography transformation matrices computed within a single period. As enlightenment was quite consistent throughout a single period, overlap among pictures was determined only by using the SURF feature-matching algorithm (Hessian threshold = 1000, RANSAC parameter = 5).

1. **Folder « Transformed pictures »**

This folder contains all the screenshots retrieved by the TEMPO ecological module and repositioned onto the new image coordinate system (Reference picture.jpg) so that they share spatio-temporal continuity.

If the user is interested to get the Python scripts performing calculation of homography matrices for image time series, please contact *lvanaude@ifremer.fr/loic.vanaudenhaege@gmail.com*.