

ISC-toolbox: Group comparison

Jussi Tohka

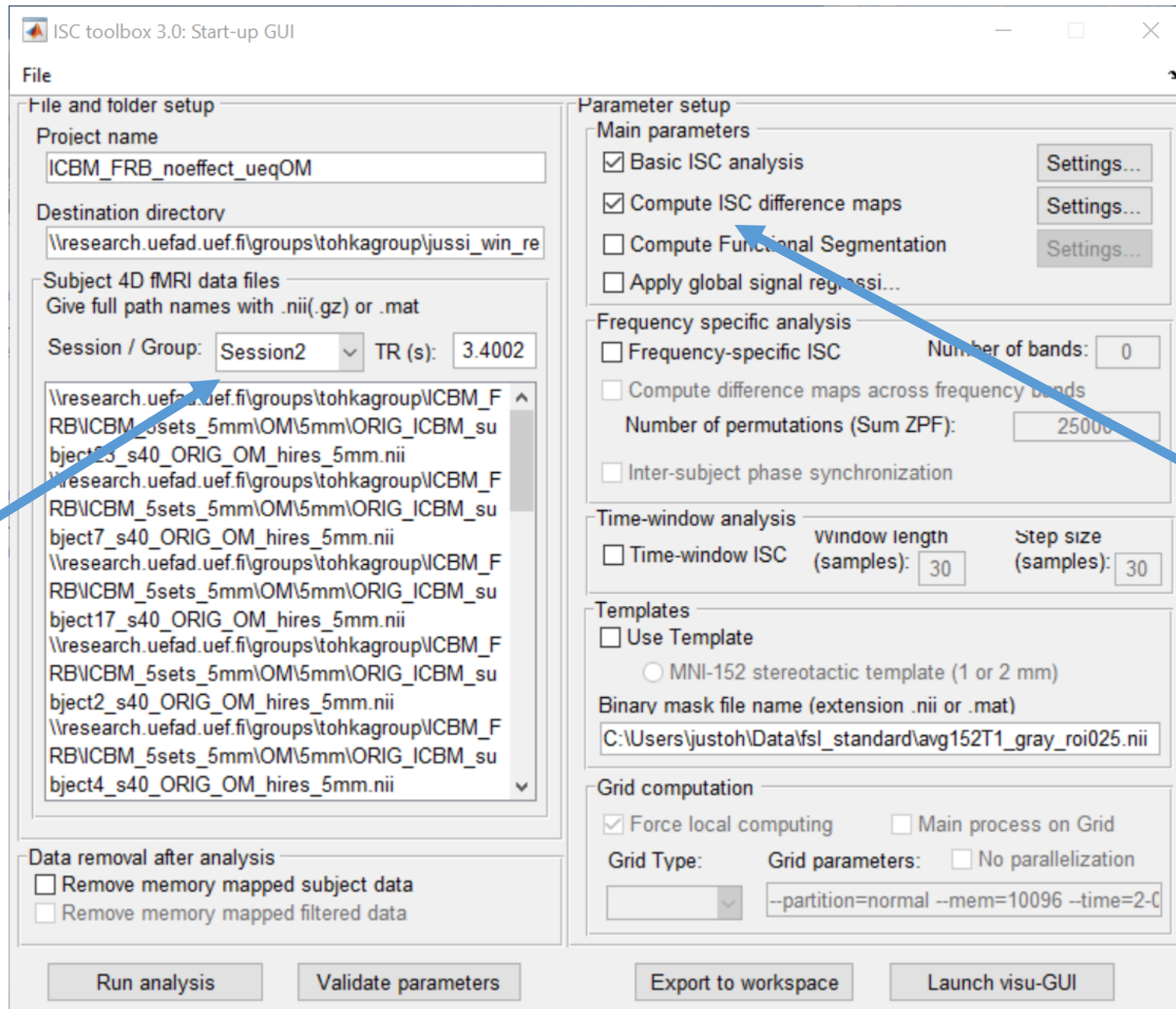
What?

- To compare ISCs of two groups of subjects
- A new feature in the version 3.0 of the toolbox
- Stimulus/task must be same for both groups; Especially, fMRI time series must be of the same length
- Pre-processing as in basic ISC analysis
- Statistics via a permutation test -> see <https://www.biorxiv.org/content/10.1101/370023v1>

for details

How?

You need 2 groups of subjects

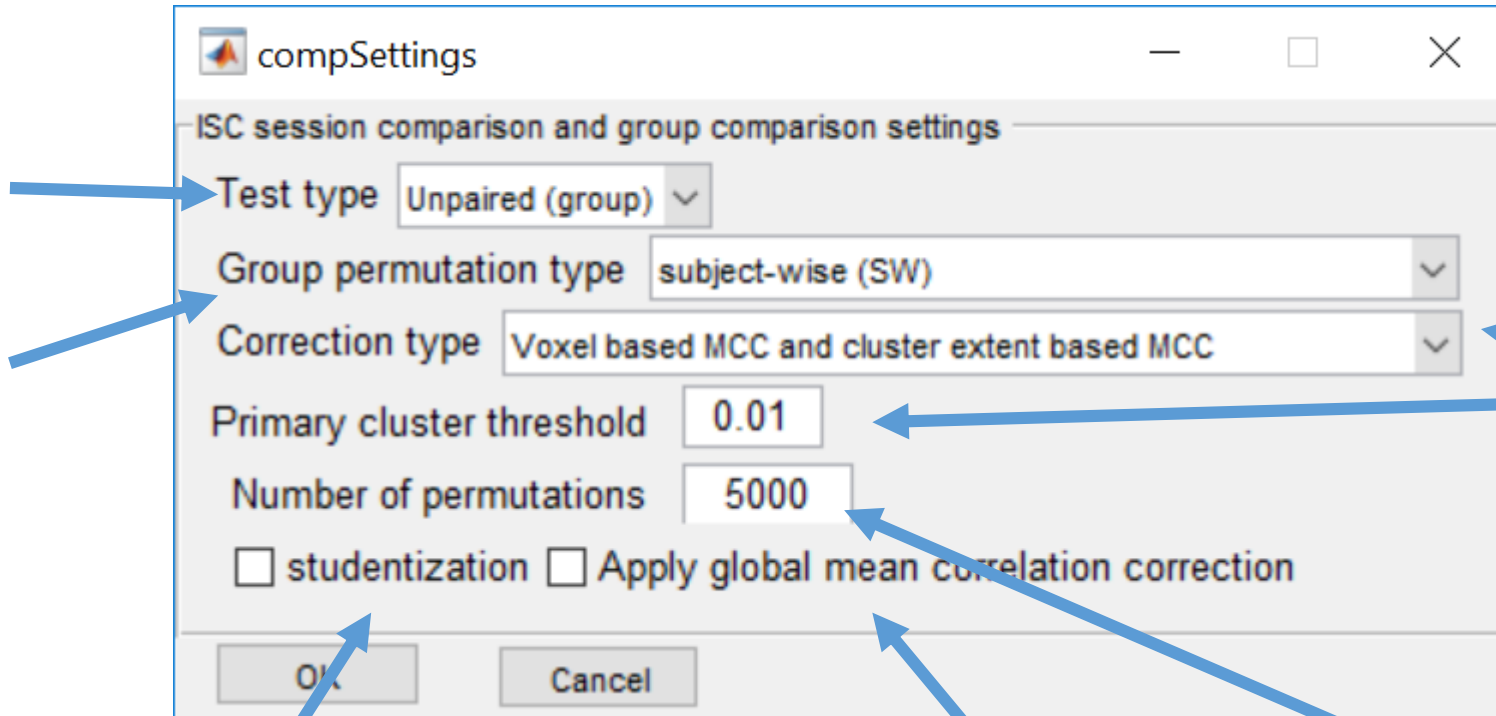


Check compute
ISC difference
maps checkbox

Group comparison settings

Set test-type as unpaired (group)

Group permutation type should be SW; Other choices lead to incorrect results and they will be removed from later versions



These relate to cluster Extent based multiple comparisons correction; If you have read the stats paper linked on the first page, these choices apply only for global models at the moment

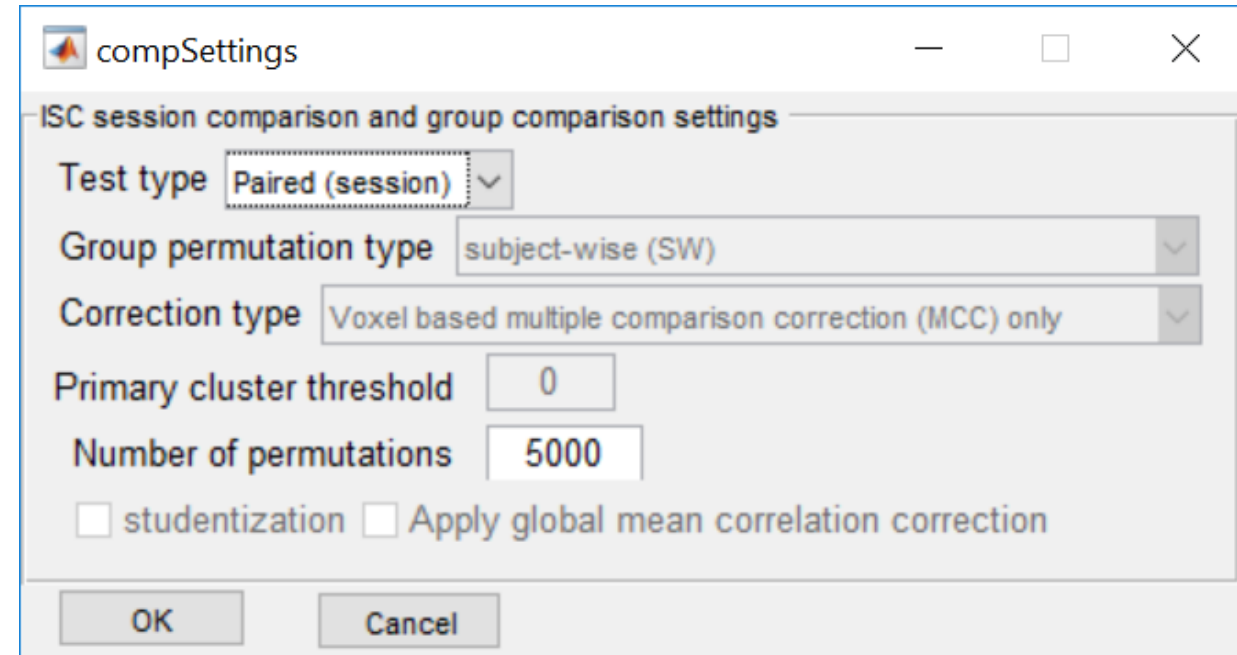
Recommended to set this on

Experimental feature; not recommended if you are uncertain about its function

5000 should be enough. We do fine tune restricted set of voxels automatically.

Session comparison

- If you want to compare two different stimuli on the same subjects
- Time-series length must still be equal
- See: Aleksandra Herbec, Jukka-Pekka Kauppi, Corinne Jola, Jussi Tohka , Frank E. Pollick. Differences in fMRI intersubject correlation while viewing unedited and edited videos of dance performance. [Cortex, 71:341 - 348, 2015](#).



Files

- In the PFsession directory – for most up-to-date info see PfsessionFiles.wiki in the wiki sub-directory
- The most important ones:
- **z_nonparametric1Band0.nii** : Z-values with voxel-wise models. Obtained from voxel-wise permutation test yielding different model for each voxel
- **pvalmaps3D1Band0.nii** : Uncorrected p-value map, referring to ZsumStat1.mat, all voxels with the same model

Files

- In the results directory, up-to-date info resultsFiles.wiki
- **SessionComparison1Band0ThresholdsWin0_Group_SW_MCCOnly_0_25000.csv** : Group comparison thresholds, use these to threshold group comparison maps. There are several thresholds which apply to different files as explained in resultsFiles.wiki
- Note that this file may be named differently based on the options used.

Finally

- Read the stats paper:

<https://www.biorxiv.org/content/10.1101/370023v1>

Please cite the paper if you use the methods implemented in the ISC toolbox

As a general reference for the toolbox, we recommend

J.-P. Kauppi, J. Pajula and J. Tohka . A Versatile Software Package for Inter-subject Correlation Based Analyses of fMRI. *Frontiers in Neuroinformatics*, 8:2, 2014.