ECCO Version 4 Release 2 [https://dataverse.harvard.edu/dataverse/ECCOv4r2] [https://dx.doi.org/10.7910/DVN/ODM2IQ]

- This dataset (https://dx.doi.org/10.7910/DVN/ODM2IQ) provides documentation for the 'ECCO Version 4 Release 2' dataverse (https://dataverse.harvard.edu/dataverse/ECCOv4r2) and included datasets (listed below). 'ECCO Version 4 Release 2' is a global ocean state estimate that covers the period from 1992 to 2011 (Forget et al. 2015, 2016). It was produced on behalf of the ECCO consortium (http://ecco-group.org/) with major support provided NASA's Physical Oceanography Program. Example applications and links to additional documentation can be found in Forget 2016 (incl. here as ECCOV4R2_MITslides.pdf).

- This dataset (http://dx.doi.org/10.7910/DVN/ODM2IQ) contains the following files:

README.pdf	general documentation of the ECCO V4 R2 dataverse (this file)
ECCOV4R2_MITslides.pdf	overview of ECCO V4 R2 presented at MIT meeting (copy of Forget 2016)
ECCOV4R2_depiction.pdf	depiction of the ECCO V4 R2 estimate (copy of Forget et al 2016)
ECCOV4R2_userGuide.pdf	user guide for ECCO V4 R2 files and model (frozen copy of eccov4.pdf)
ECCOV4R2_gcmfaces.pdf	user guide for `gcmfaces' Matlab toolbox (frozen copy of gcmfaces.pdf)
eccov4_lonlat.m	Matlab routine to extract the lat-lon part of ECCO V4 fields (69°S to 56°N)
nctiles90x90.jpg	map of 90x90 tile indices (nctiles format depiction; 13 tiles case)
nctiles45x45.jpg	map of 45x45 tile indices (nctiles format depiction; 52 tiles case)
estimate_history.log	summary of the ECCO V4 estimate history (see Forget et al 2015, 2016)
available_diagnostics.log	list of all possible MITgcm diagnostics (not limited to those available online)
STDOUT.0000	MITgcm's standard output from ECCO V4 R2 model integration (text file)
costfunction0012	model-data cost function summary from MITgcm/pkg/ecco (text file)

- The `ECCO Version 4 Release 2' dataverse (https://dataverse.harvard.edu/dataverse/ECCOv4r2) contains the following datasets:

http://dx.doi.org/10.7910/DVN/ODM2IQ	documentation of `ECCO Version 4 Release 2' (this dataset)
http://dx.doi.org/10.7910/DVN/H8W5VW	grid variables (LLC90 grid in native and nctiles format)
http://dx.doi.org/10.7910/DVN/NXYKDW	monthly 1992-2011 time series
http://dx.doi.org/10.7910/DVN/3HPRZI	mean monthly 1992-2011 climatology
http://dx.doi.org/10.7910/DVN/T093T1	three-daily tendency terms for temperature
http://dx.doi.org/10.7910/DVN/VQR2WH	three-daily tendency terms for salinity
http://dx.doi.org/10.7910/DVN/EE3C40	in situ and estimated profile data (MITprof data sets)
http://dx.doi.org/10.7910/DVN/WJNXU3	remotely sensed variables (observed and estimated)
http://dx.doi.org/10.7910/DVN/AMIYU7	diffusivity parameter estimates
http://dx.doi.org/10.7910/DVN/OOB8NR	map of ocean basin indices

- The embedded `ECCO Version 4 Release 2 Inputs' dataverse (https://dataverse.harvard.edu/dataverse/ECCOv4r2inputs) contains:

http://dx.doi.org/10.7910/DVN/PICCRE	documentation of the `ECCO Version 4 Release 2 Inputs' dataverse
http://dx.doi.org/10.7910/DVN/9WYSZF	ECCO version 4 release 2 inputs: surface forcing fields
http://dx.doi.org/10.7910/DVN/7XYXSF	ECCO version 4 release 2 inputs: model initialization
http://dx.doi.org/10.7910/DVN/GNOREE	ECCO version 4 release 2 inputs: in situ T-S profiles
http://dx.doi.org/10.7910/DVN/MEDQWY	ECCO version 4 release 2 inputs: sea level anomaly
http://dx.doi.org/10.7910/DVN/L3OQT0	ECCO version 4 release 2 inputs: sea surface temperature
http://dx.doi.org/10.7910/DVN/DKXQHO	ECCO version 4 release 2 inputs: ice cover fraction
http://dx.doi.org/10.7910/DVN/F8BCRF	ECCO version 4 release 2 inputs: surface wind stress
http://dx.doi.org/10.7910/DVN/SYZMUX	ECCO version 4 release 2 inputs: bottom pressure
http://dx.doi.org/10.7910/DVN/H2Q1ND	ECCO version 4 release 2 inputs: miscellaneous

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- Comments:

- Each dataset listed above contains its own README file that provides more specific and detailed documentation.
- Global state estimate fields are provided on the native LLC90 grid in nctiles format (see Forget et al 2015). Their 69°S to 56°N sector, which follows a simple `lat-lon' grid, can be extracted using the included Matlab routine (eccov4_lonlat.m). Global fields can also be manipulated or interpolated to any other grid using the gcmfaces toolbox (see ECCOV4R2_gcmfaces.pdf).
- Users can also re-run the ECCO V4 R2 solution (e.g. to generate additional output or to experiment with the model) using input fields provided in https://dataverse.harvard.edu/dataverse/ECCOv4r2inputs (see ECCOV4R2_userGuide.pdf for directions).
- The formatting, online publishing, and archiving of the ECCO V4 R2 dataverse and datasets have benefited from guidance that was graciously provided by the MIT Libraries Data Management Services (http://libraries.mit.edu/data-management/). At time of writing the contents listed above can alternatively be downloaded from ftp://mit.ecco-group.org/ecco_for_las/version_4/release2/ that further provides the ECCO V4 R2 fields interpolated to a global regular 1/2° lat-lon grid (inside `interp_*/').

- References:

- Forget, G., J.-M. Campin, P. Heimbach, C. N. Hill, R. M. Ponte, and C. Wunsch, 2015: ECCO version 4: an integrated framework for non-linear inverse modeling and global ocean state estimation. Geoscientific Model Development, 8, 3071-3104, http://dx.doi.org/10.5194/gmd-8-3071-2015
- Forget, G., J.-M. Campin, P. Heimbach, C. N. Hill, R. M. Ponte, and C. Wunsch, 2016: ECCO version 4: Second Release, http://hdl.handle.net/1721.1/102062
- Forget, G. 2016: ECCO Version 4: Contents And Usage, http://hdl.handle.net/1721.1/103367

- Software:

- The ECCO V4 R2 files were produced using the `checkpoint64u' versions of the general circulation model (MITgcm and ECCO v4 settings) and Matlab analysis toolboxes (gcmfaces and MITprof). These software versions are available at http://mitgcm.org/download/other_checkpoints/ and http://mit.ecco-group.org/opendap/ecco_for_las/version_4/checkpoints/contents.html
- The up to date software documentations are available at http://mitgcm.org/public/r2_manual/latest/online_documents/manual.pdf, http://mitgcm.org/viewvc/*checkout*/MITgcm/MITgcm_contrib/gael/verification/eccov4.pdf, and http://mitgcm.org/viewvc/*checkout*/MITgcm/MITgcm_contrib/gael/matlab_class/gcmfaces.pdf

- Contact Us:

- questions regarding the ECCO model set-up, grid, software, or files should be addressed to
  either ecco-support@mit.edu (please subscribe via http://mailman.mit.edu/mailman/listinfo/ecco-support)
  or mitgcm-support@mitgcm.org more generally (please subscribe via http://mitgcm.org/mailman/listinfo/mitgcm-support).

- README file / dataset revision history:

- revised dataset name [Gael Forget] [2017/01/02]
- update ECCOV4R2_gcmfaces.pdf [Gael Forget] [2017/01/02]

- update ECCOV4R2_userGuide.pdf [Gael Forget] [2017/01/02]
- update ECCOV4R2_gcmfaces.pdf [Gael Forget] [2016/12/07]
- update ECCOV4R2_userGuide.pdf [Gael Forget] [2016/12/07]
- README file overhaul for use within dataverse [Gael Forget] [2016/08/03]