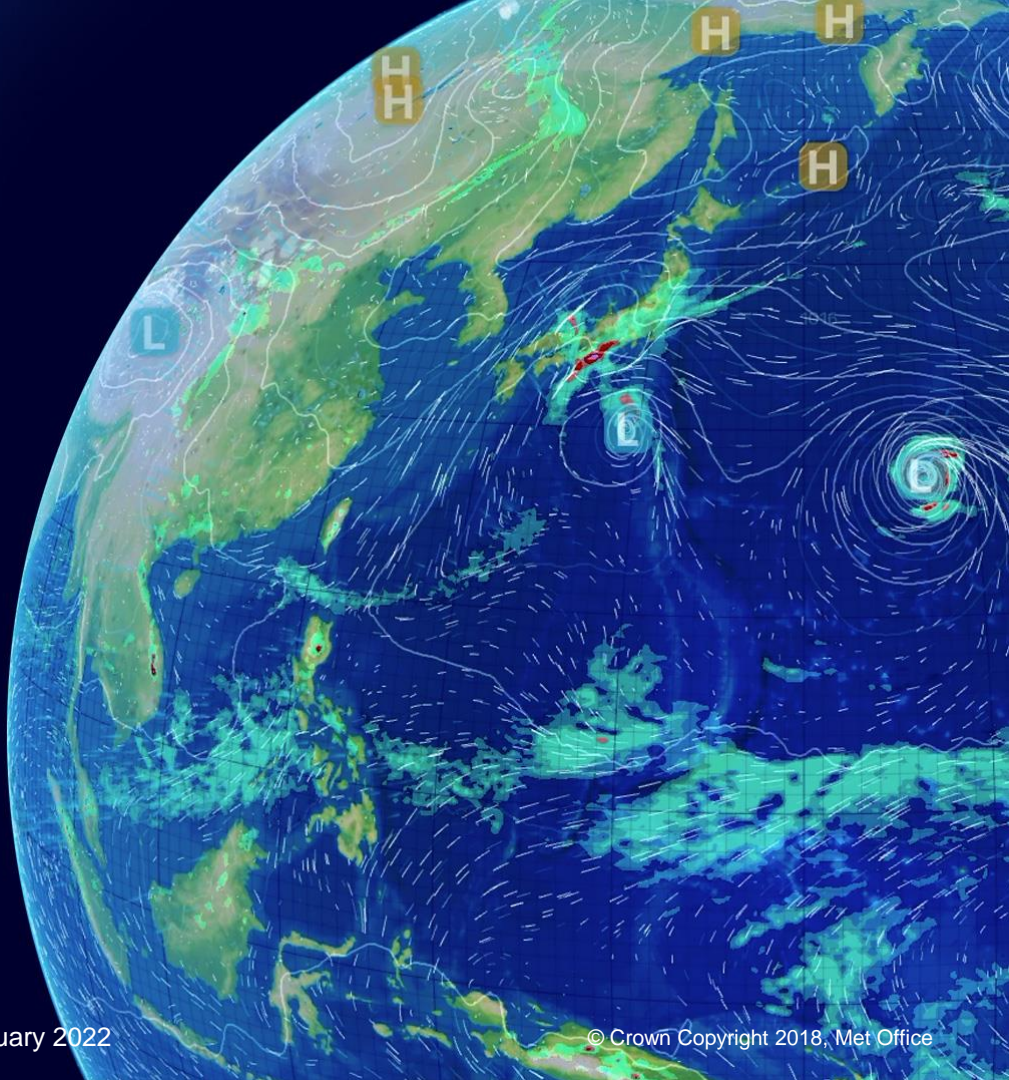


COSP contributions to CMIP5&6

Alejandro Bodas-Salcedo



- **ISCCP**: pseudo-retrievals of cloud top pressure (CTP) and cloud optical thickness (τ) (Klein and Jakob, 1999; Webb et al., 2001).
- **CloudSat**: a forward model for radar reflectivity as a function of height (Haynes et al., 2007).
- **CALIPSO** (Chepfer et al., 2008; Cesana and Chepfer, 2013): forward model for the lidar scattering ratio as a function of height and cloud-phase retrieval.
- **MODIS**: pseudo-retrievals of CTP, effective particle size and τ as a function of phase (Pincus et al., 2012).
- **MISR**: pseudo-retrievals of cloud top height (CTH) and τ (Marchand and Ackerman, 2010).
- **PARASOL**: simple forward model of mono-directional reflectance (Konsta et al., 2015).
- **CLARA**: under development (Eliasson et al., 2020)

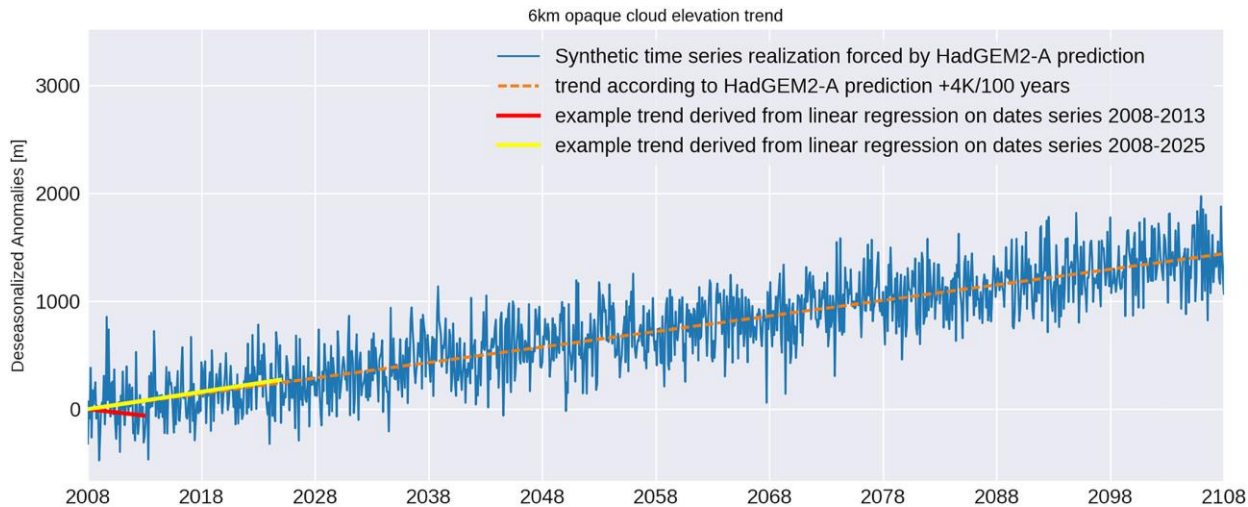
Documentation papers: Bodas-Salcedo et al., BAMS, 2011; Swales et al., GMD, 2018.

- 100s of papers published using COSP
- Single-model and multi-model
- Evaluation, cloud feedbacks, detection, etc

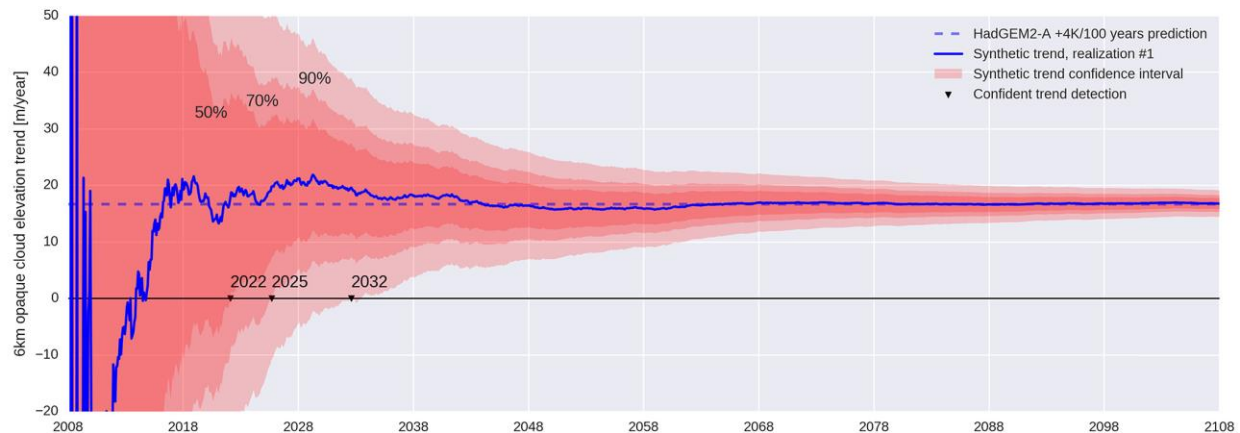
	I CA	I CA	I CA	MI MO PA CA CL	MO PA CA	MO PA CA CL
	cfMon-sim	cfDay-2d	cfDay-3d	CFMIP-cfMonExtra	CFMIP-cfDayExtra	Cf3hr-sim-new
amip	1979-	1979-	1979-	1979-	1979-	2008
piControl	140 years	140 years				
1pctCO2	140 years	140 years				
abrupt4xCO2	140 years	140 years				
historical (+CFMIP3)	All years	All years				
	I CA CL					
	MI MO PA					

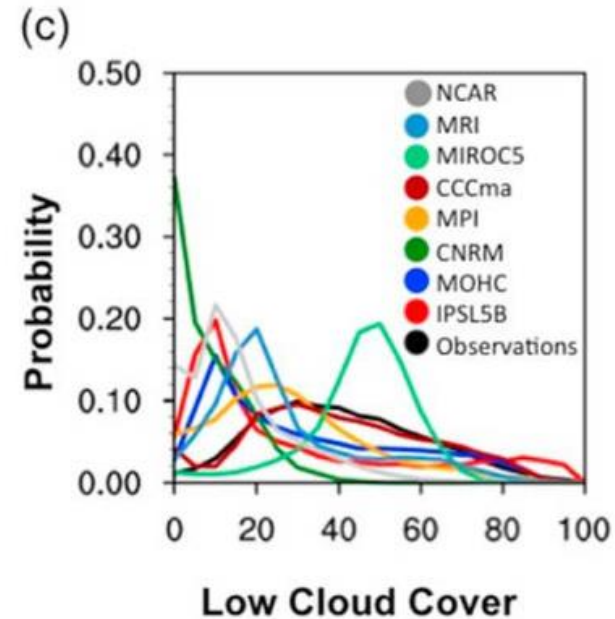
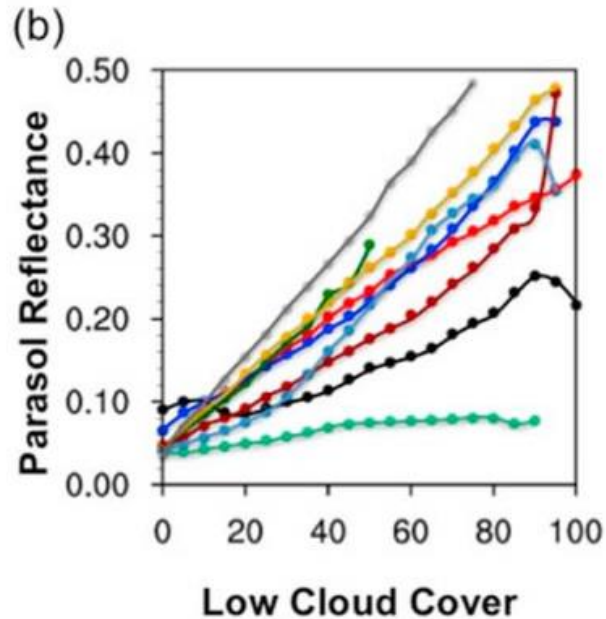
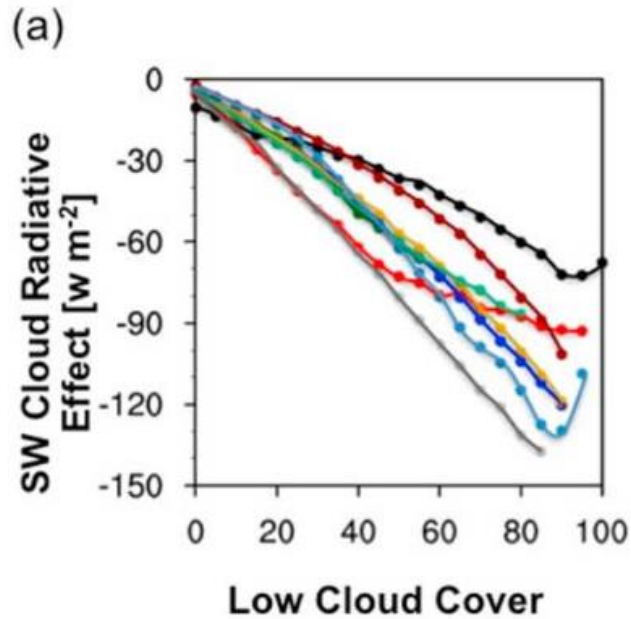
cfMon-sim	cltisccp, albisccp, pctisccp, clisccp, cltcalipso, clcalipso, clmcalipso, clhcalipso, clcalipso
cfDay-2d	cltisccp, albisccp, pctisccp, cltcalipso, clcalipso, clmcalipso, clhcalipso
cfDay-3d	clisccp, clcalipso
CFMIP-cfMonExtra	clcalipsoliq, clcalipsoice, cfadLidarsr532, cfadDbze94, clmivr, jpdftaureliqmodis, jpdftaureicemodis, clwmodis, climodis, cltmodis, parasolRef1
CFMIP-cfDayExtra	jpdftaureliqmodis, jpdftaureicemodis, parasolRef1
cf3hr-sim-new	clisccp, clcalipso, clcalipso2, cltcalipso, clcalipso, clmcalipso, clhcalipso, cfadLidarsr532, cfadDbze94, clmivr, jpdftaureliqmodis, jpdftaureicemodis, parasolRef1

(Webb et al., GMD, 2017)



Chepfer et al., JGR, 2018: The Potential of a Multidecade Spaceborne Lidar Record to Constrain Cloud Feedback

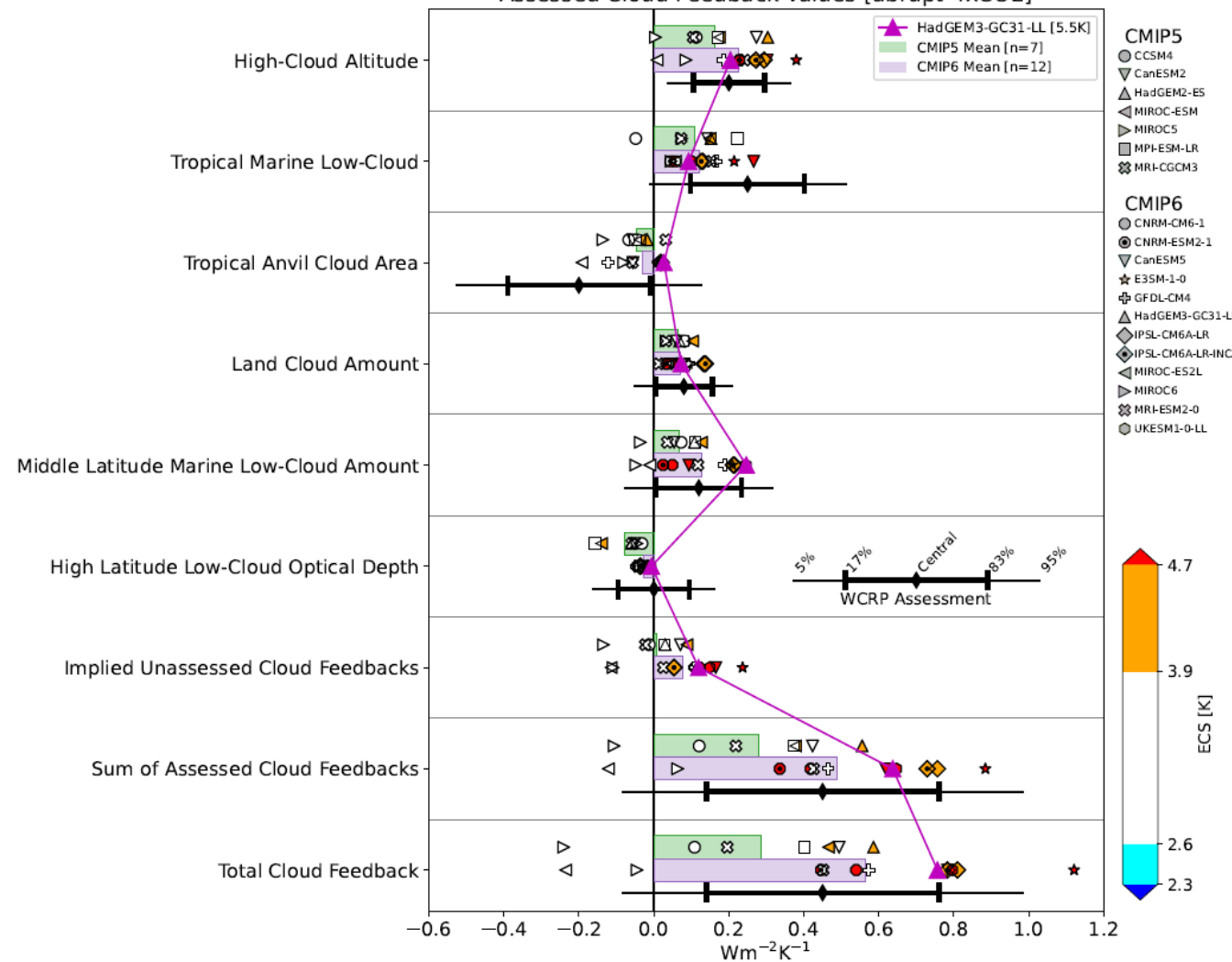




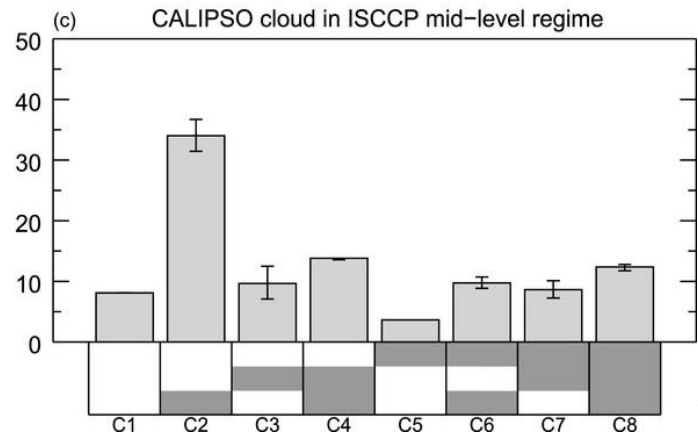
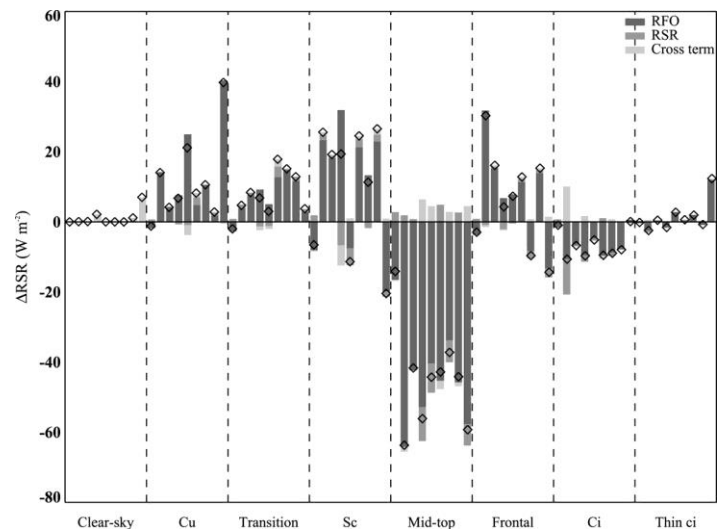
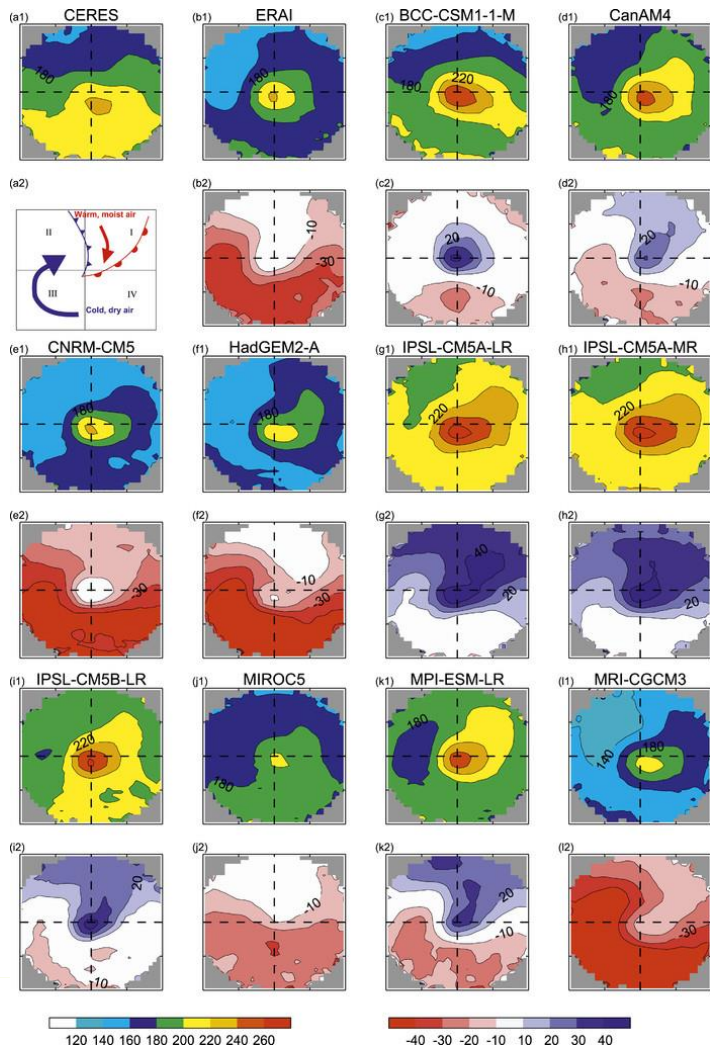
Nam et al., GRL, 2012: The 'too few, too bright' tropical low-cloud problem in CMIP5 models

Assessed Cloud Feedback Values [abrupt-4xCO2]

Zelinka et al., JGR, 2022:
Evaluating Climate
Models' Cloud Feedbacks
Against Expert Judgment



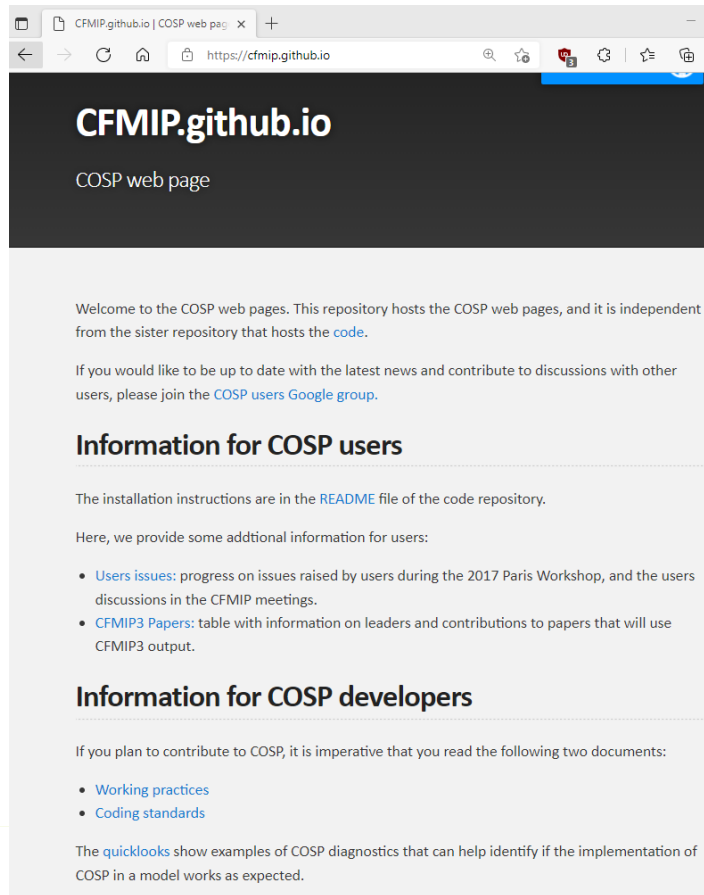
Bodas-Salcedo et al., JCLim, 2014:
Origins of the Solar Radiation Biases over the Southern Ocean in CFMIP2 Models



Developments by H. Chepfer's team and collaborators:

- UV wavelength for the lidar in COSP.
- Doppler component not implemented yet, need to study data first. Not completely sure if would be worth to create a Level 1 simulator for velocity.
- Aerosol lidar has been implemented in a research version of COSP. Large change that has not been made publicly available.

Contributing to COSP



The screenshot shows a web browser displaying the CFMIP.github.io website. The page has a dark header with the text "CFMIP.github.io" and "COSP web page". Below the header, there is a welcome message, a link to the sister repository, and instructions for users and developers. The page is organized into sections with dashed lines separating them.

Welcome to the COSP web pages. This repository hosts the COSP web pages, and it is independent from the sister repository that hosts the [code](#).

If you would like to be up to date with the latest news and contribute to discussions with other users, please join the [COSP users Google group](#).

Information for COSP users

The installation instructions are in the [README](#) file of the code repository.

Here, we provide some additional information for users:

- [Users issues](#): progress on issues raised by users during the 2017 Paris Workshop, and the users discussions in the CFMIP meetings.
- [CFMIP3 Papers](#): table with information on leaders and contributions to papers that will use CFMIP3 output.

Information for COSP developers

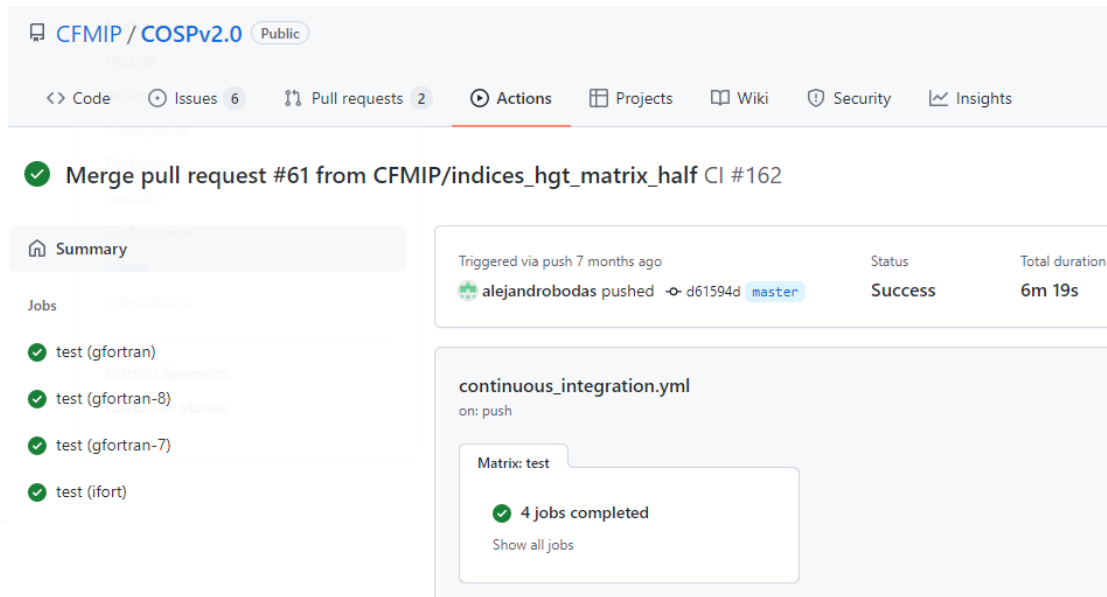
If you plan to contribute to COSP, it is imperative that you read the following two documents:

- [Working practices](#)
- [Coding standards](#)

The [quicklooks](#) show examples of COSP diagnostics that can help identify if the implementation of COSP in a model works as expected.

<https://cfmip.github.io>

- Links to code and **working practices**.
- **CI** tests developed over the last 2 years have lowered the bar for contributions.



The screenshot shows a GitHub pull request for the repository CFMIP / COSPv2.0. The pull request is titled "Merge pull request #61 from CFMIP/indices_hgt_matrix_half CI #162". The status is "Success" and the duration is "6m 19s". The pull request is triggered via push 7 months ago by user alexandrobodas. The pull request summary shows a list of jobs: test (gfortran), test (gfortran-8), test (gfortran-7), and test (ifort). The CI status shows that the continuous_integration.yml workflow on push has completed 4 jobs.

CFMIP / COSPv2.0 Public

<> Code Issues 6 Pull requests 2 Actions Projects Wiki Security Insights

✓ Merge pull request #61 from CFMIP/indices_hgt_matrix_half CI #162

Summary

Jobs

- ✓ test (gfortran)
- ✓ test (gfortran-8)
- ✓ test (gfortran-7)
- ✓ test (ifort)

Triggered via push 7 months ago

alexandrobodas pushed · d61594d master

Status: Success Total duration: 6m 19s

continuous_integration.yml
on: push

Matrix: test

✓ 4 jobs completed

Show all jobs