

Hurricanes and Climate Working Group

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Hurricanes WG objectives

- An improved understanding of interannual variability, and trends, in tropical cyclone activity from the beginning of the 20th century to the present.
- Quantifying changes in the characteristics of tropical cyclones under a warming climate.

Hurricane WG tasks

- Define common experiments for model simulations by participating modeling group
- Supply common data sets and tropical cyclone metrics for those experiments
- Coordinate the evaluation and reporting of common experiments and the storage of model output
- Organize workshops to present and discuss the results

Hurricanes WG

- January 2011 – December 2012
- Co-leaders:
 - Suzana J. Camargo, LDEO, Columbia University
 - Gabriel A. Vecchi, GFDL
 - Kevin Walsh, University of Melbourne, Australia
- 1st Workshop: January 2012 in New Orleans (after AMS annual meeting).
- BAMS paper in preparation (Vecchi, Camargo et al.)
- Journal Climate special issue with papers from the WG in preparation (1st paper submitted)
- 2nd workshop planned for Spring 2013 (Lamont?).

Hurricanes WG membership

Name	Affiliation
James Elsner	Florida State University
Kerry Emanuel	MIT
James Kossin	NOAA
Christopher Landsea	NOAA
Timothy LaRow	Florida State University
Siegfried Schubert	NASA GSFC
Adam Sobel	Columbia University
Gabrielle Villarini	University of Iowa
Hui Wang	NOAA NCEP
Ming Zhao	GFDL
Lennart Bengtsson	University of Reading, UK
In-Sik Kang	Seoul National University, S. Korea
K. Oouchi	JAMSTEC, Japan
Enrico Scoccimarro	INGV-CCMC, Italy

Additional Contributing Members

Name	Institution
Julio Bacmeister	NCAR
Fabrice Chauvin	CNRM, France
Ping Chang, R. Saravanan, and Christina Patricola	Texas A&M Univeresity
Monika Esch	MPI, Germany
Hiroyuki Murakami	MRI, Japan
Christiane Jablonowsky and Kevin Reed	University of Michigan
Malcolm Roberts	Met Office, UK
Pier Luigi Vidale	University of Reading, UK
Michael Wehner	Lawrence Berkeley National Laboratory

Current Simulations:

- Climatology
- Climatology + SST+2K
- Climatology + 2CO₂
- Climatology + SST+2K & 2CO₂
- Interannual

Model Data:

Model	Resolution	Runs	Number of years
CAM5.1	1.25deg x 1deg	Climo, p2K, 2CO2, p2K2 CO2	15 years
Echam5 - INGV	0.75deg x 0.75deg	Climo, p2K, 2CO2, p2K2 CO2	10 years
CNRM	0.5deg x 0.5deg	Interannual	10 years
FSU	0.94deg x 0.94deg	Climo, 2CO2, p2K, Interannual	5 yrs, 10 yrs, 10 yrs, 25 years
HIRAM GFDL	0.625deg x 0.5deg	Climo, p2K, 2CO2, p2K2 CO2, Interannual	20 years 30 years, 3 ens.
GISS	1deg x 1deg	Climo, p2K, 2CO2, p2K2 CO2, Interannual	20 years 20 years
GSFC - NASA	0.625deg x 0.5deg	Climo, p2K, 2CO2, p2K2 CO2, Interannual	20 years 30 years

Model Data II

Model	Resolution	Runs	Number of years
JAMSTEC	0.14deg x 0.14 deg	Climo, GW	4 months
NCEP	1deg x 1deg	Climo, p2K, 2CO2, p2K2 CO2	20 years
WRF	1deg x 1deg (Atlantic)	Climo, Interannual	20 years

Models that we will probably receive data:

- HadGCM3
- MRI

Issues

- Varying periods, variables and runs among the models.
- Not all modeling groups are providing the data in all time frequencies necessary for the analysis (monthly, data, 6-hourly).
- Tier 2 simulations didn't seem viable at the latest telecon discussion.
- Serving the data for the community after the WG publishes papers analyzing the dataset is still an unsolved problem.
- Authorship in papers.

Summary

- Most modeling centers have finished tier 1 simulations and contributed data to the WG.
- Lamont serving data to the WG.
- 1st workshop successful
- BAMS paper in preparation.
- Journal Climate special issue in place
- Multi model comparison by various groups in progress.
- 2nd workshop being planned – to be followed by 2nd BAMS paper.
- Not enough resources for tier 2 experiments.

Preliminary results

- Contributions by:
 - Ming Zhao, GFDL (with Gabriel Veccchi and modelers)
 - Daniel Shaevitz, LDEO (with Suzana Camargo, Adam Sobel and modelers)
 - Kerry Emanuel, MIT (with modelers)
 - James Elsner, FSU (with and modelers)

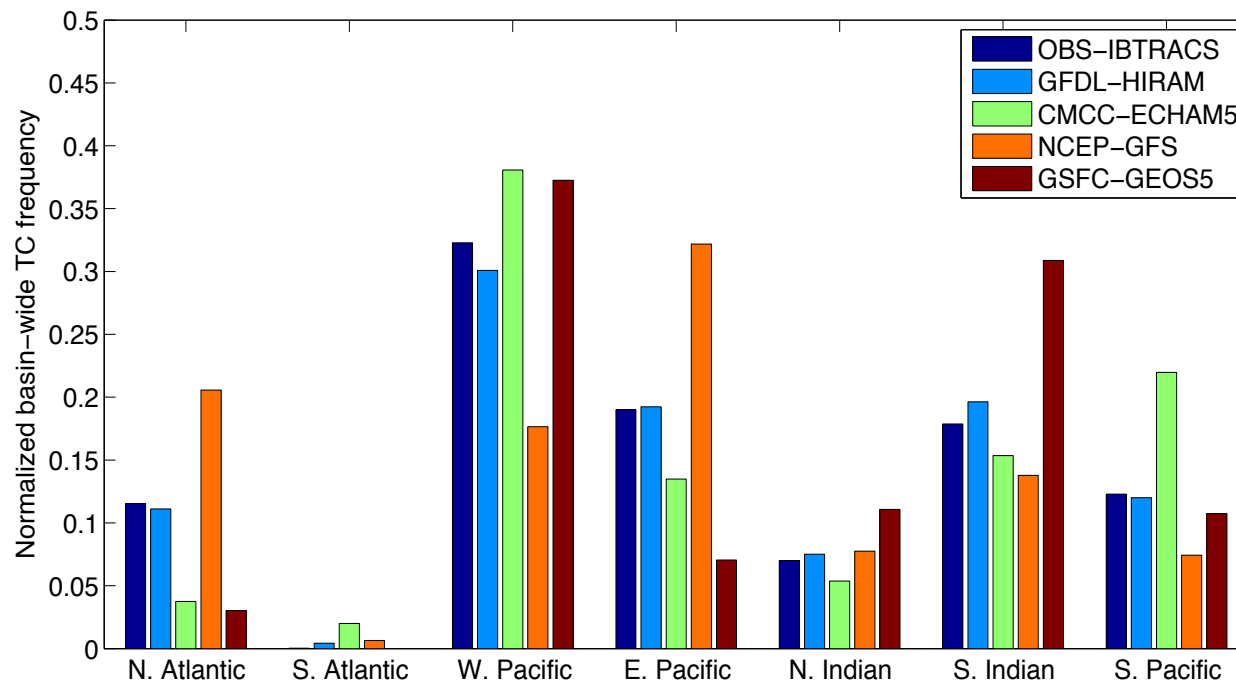
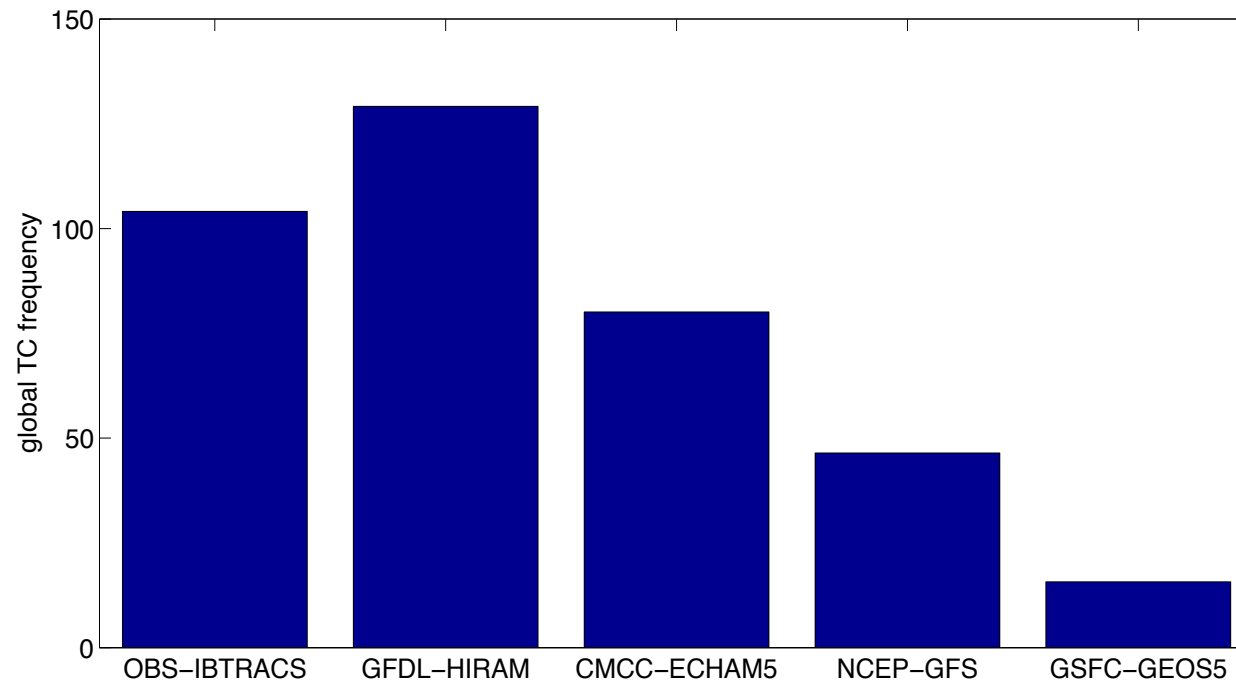


Figure by
Ming Zhao, GFDL

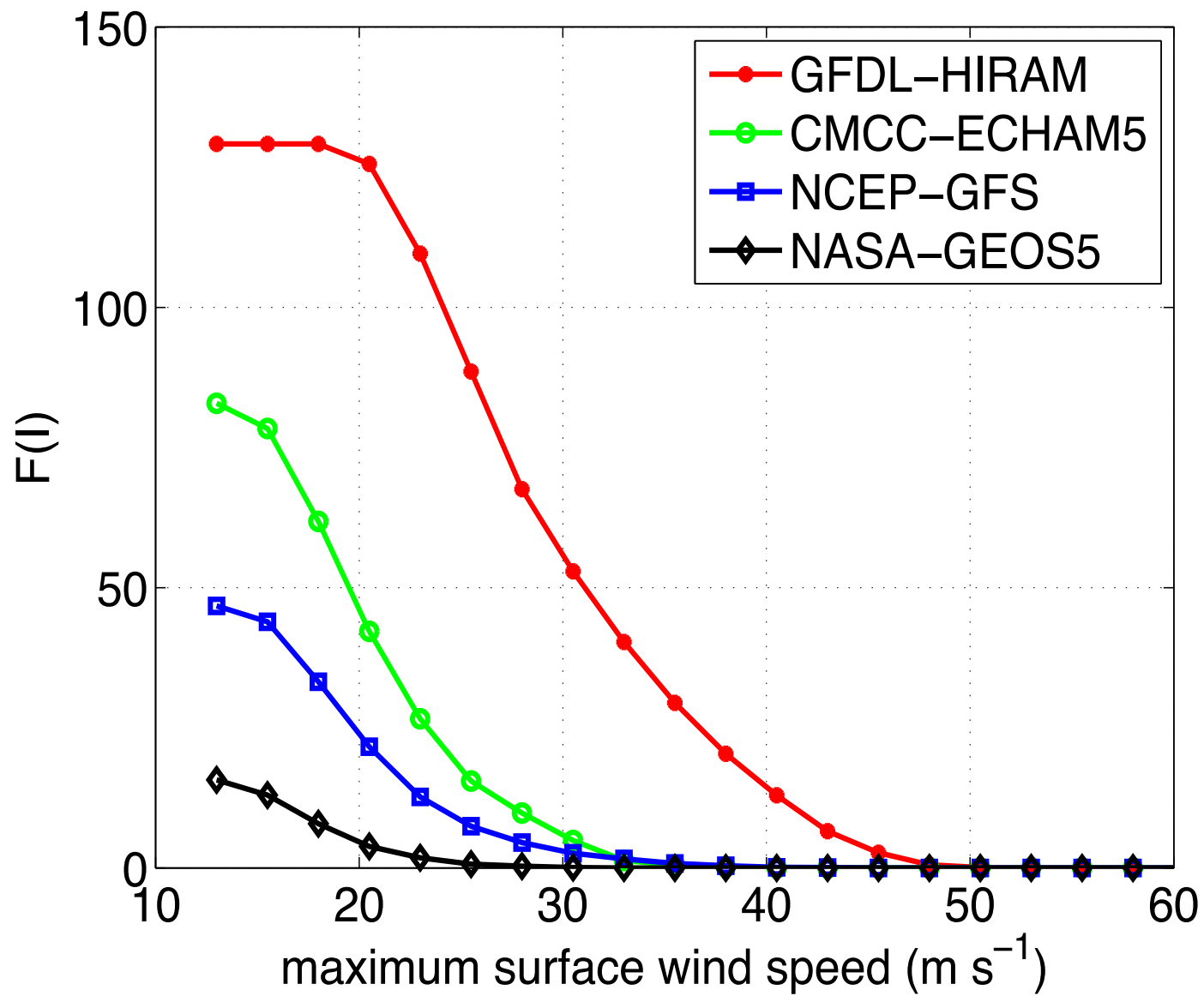


Figure by Ming Zhao, GFDL

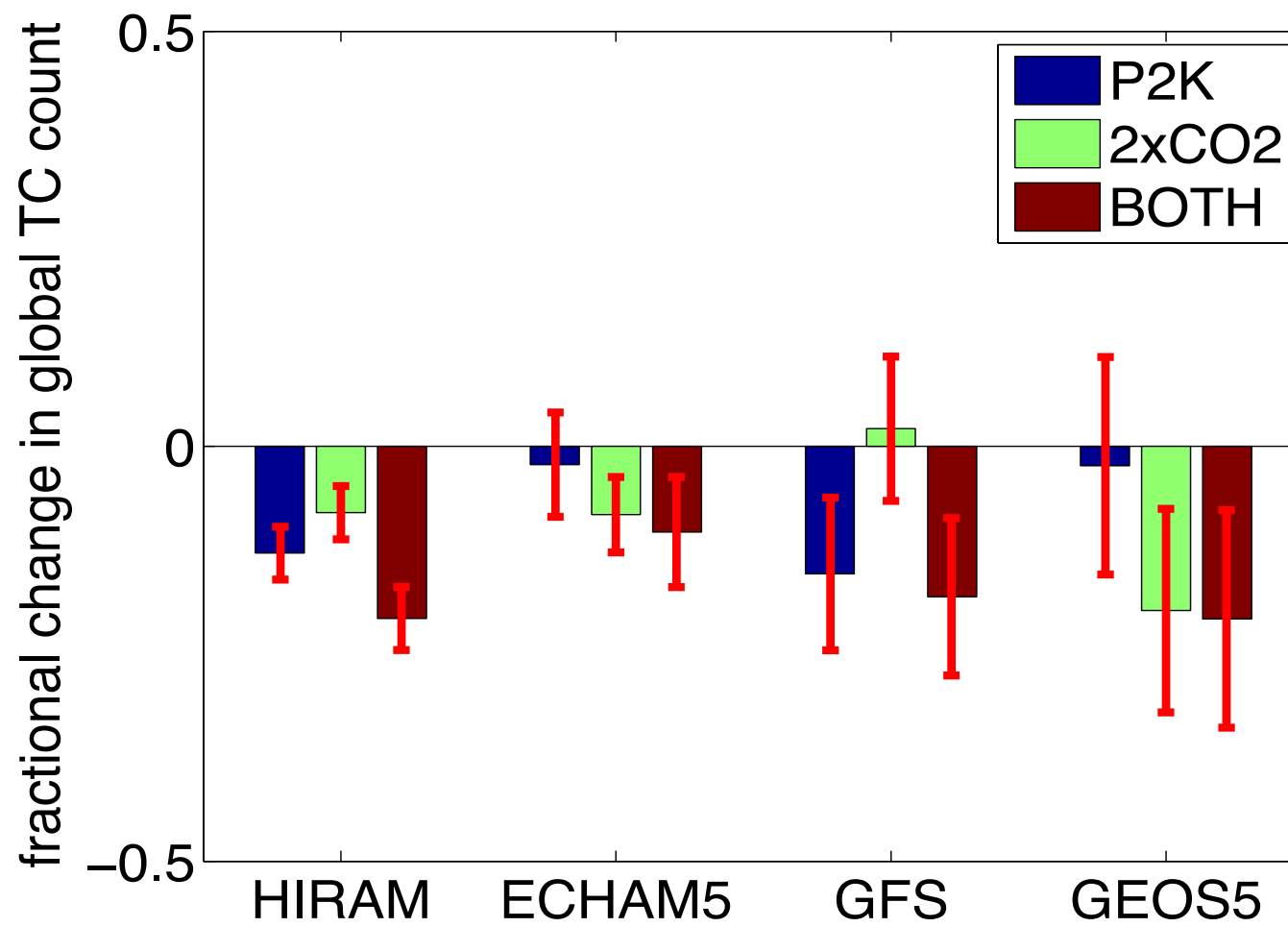


Figure by Ming Zhao, GFDL

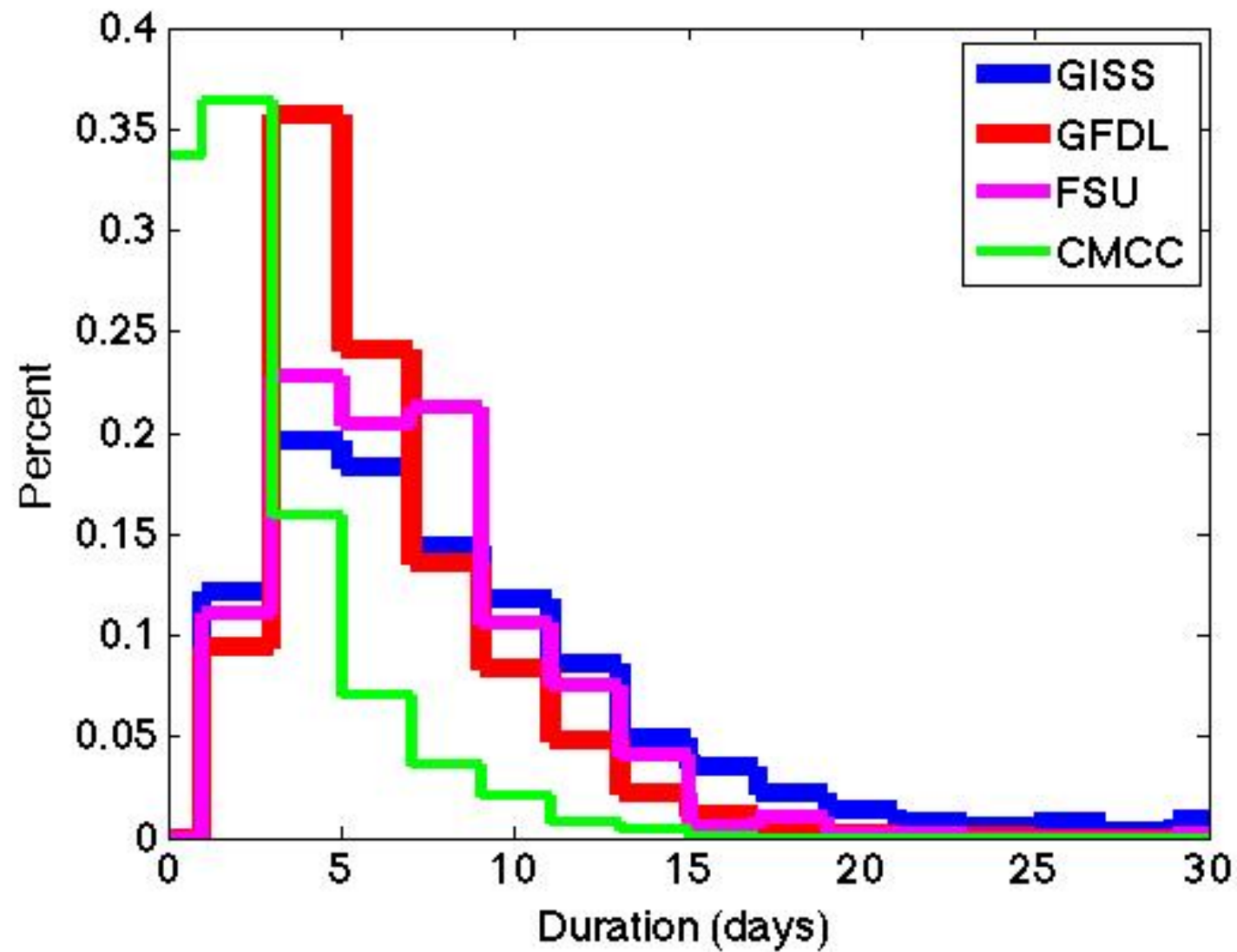


Figure by Daniel Shaevitz, LDEO

GFDL model

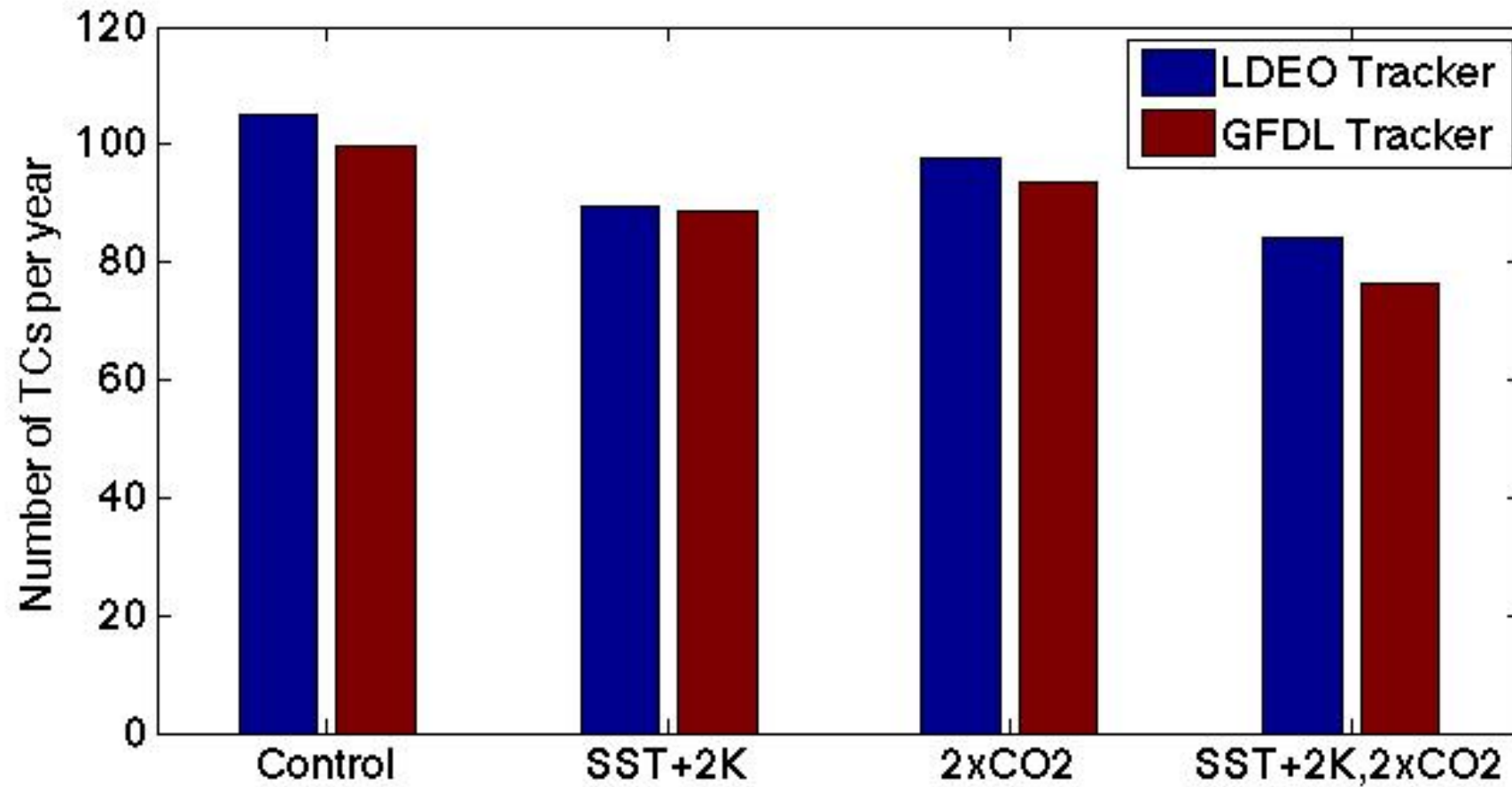
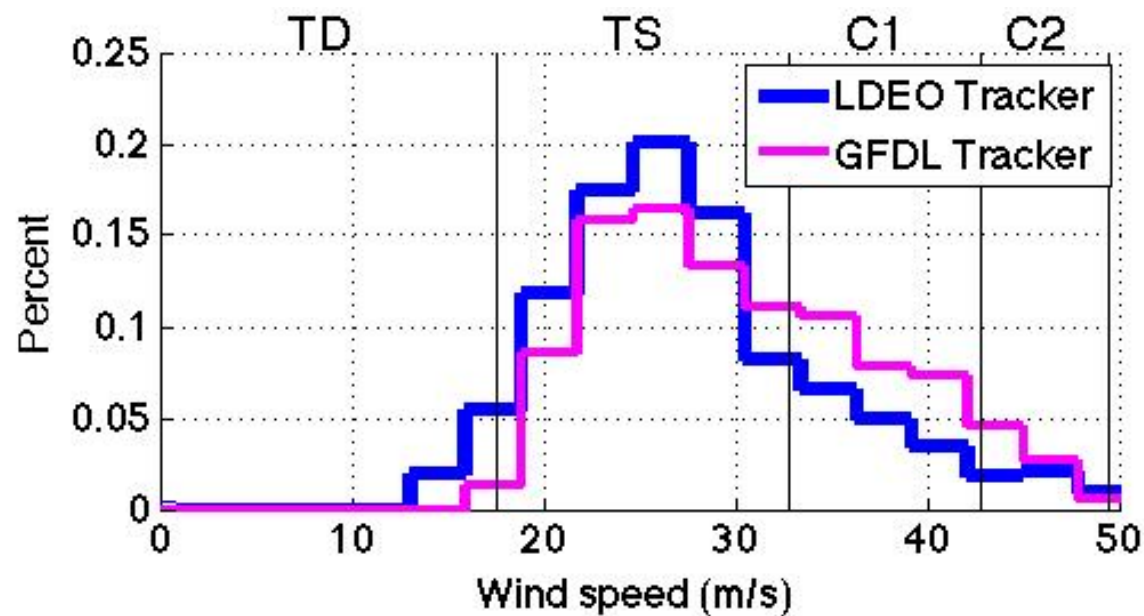
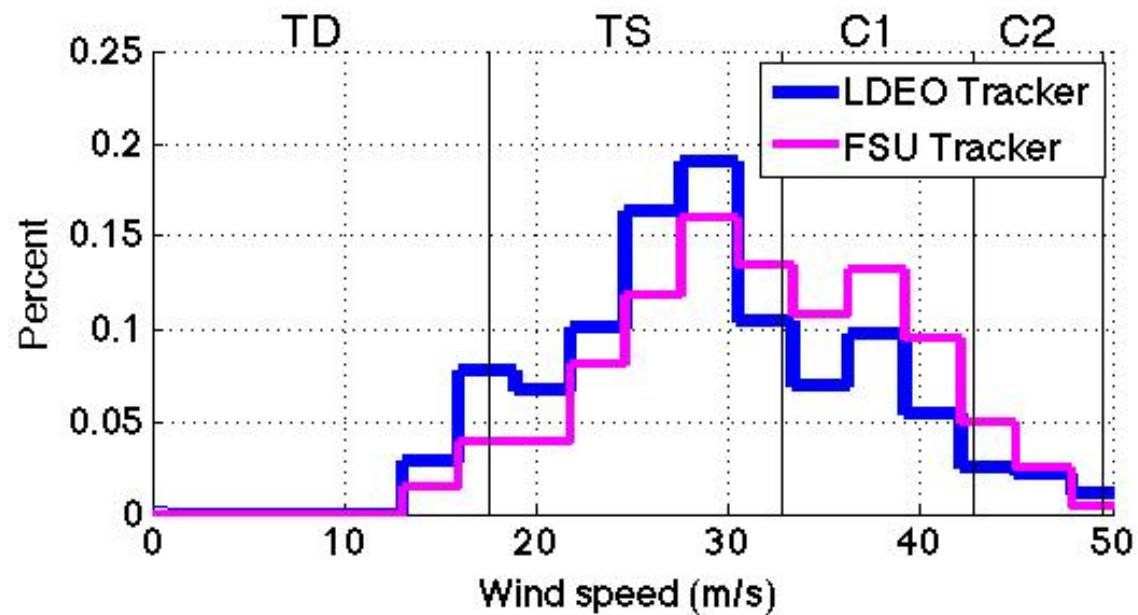


Figure by Daniel Shaevitz, LDEO



GFDL model



FSU model

Figures by Daniel Shaevitz, LDEO

Statistical-dynamical downscaling: Synthetic Tracks

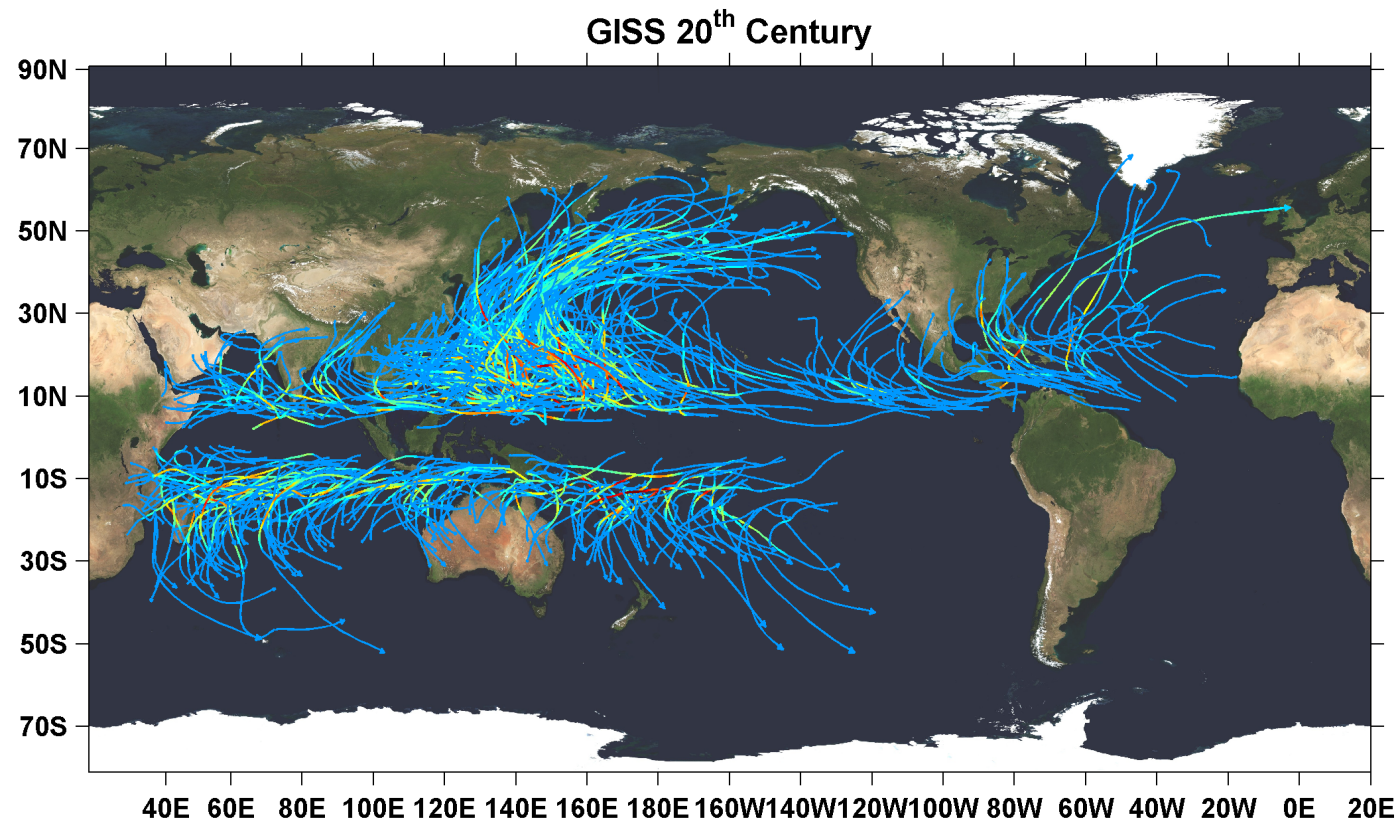


Figure by Kerry Emanuel

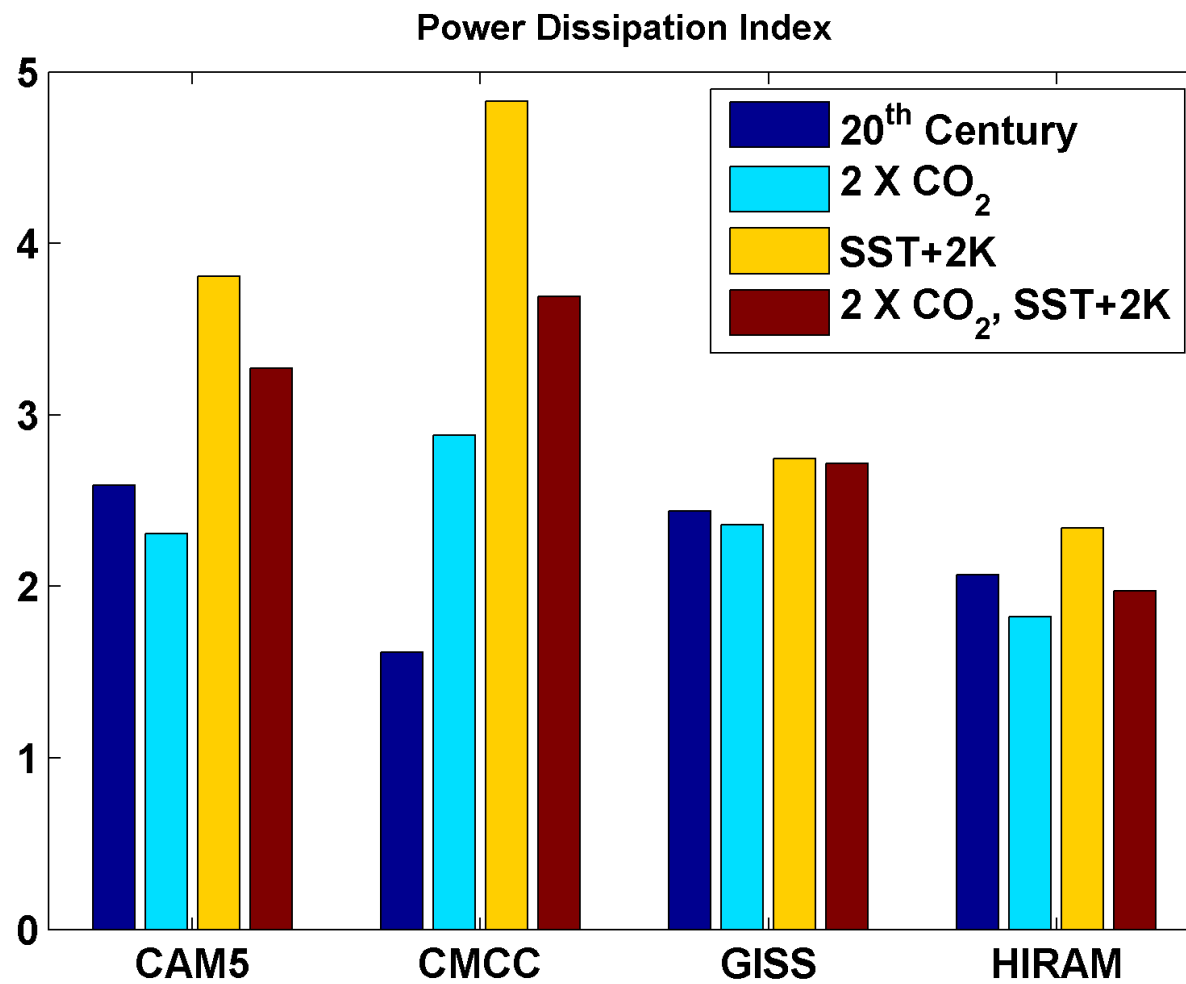


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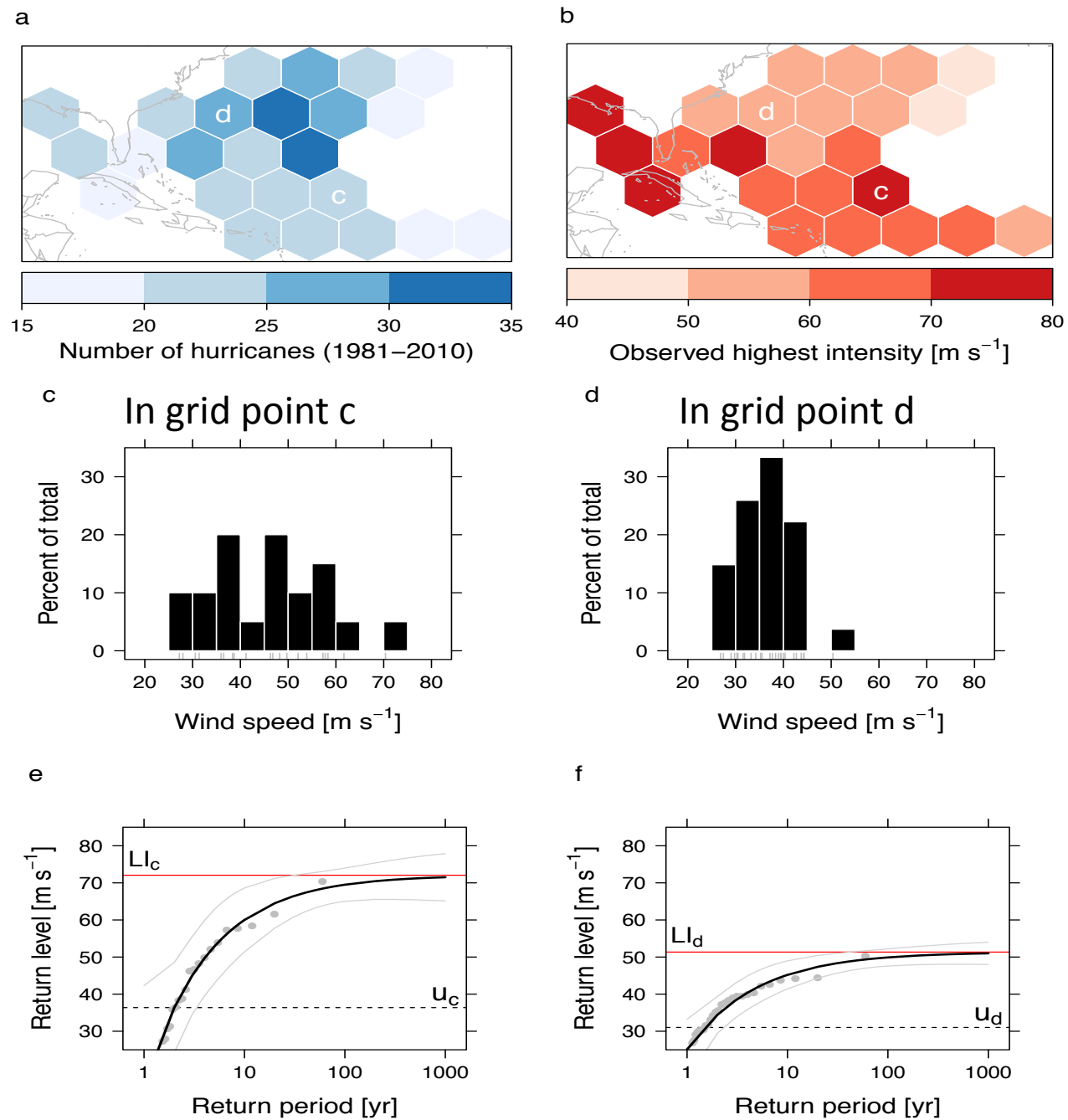


Figure by James Elsner, FSU

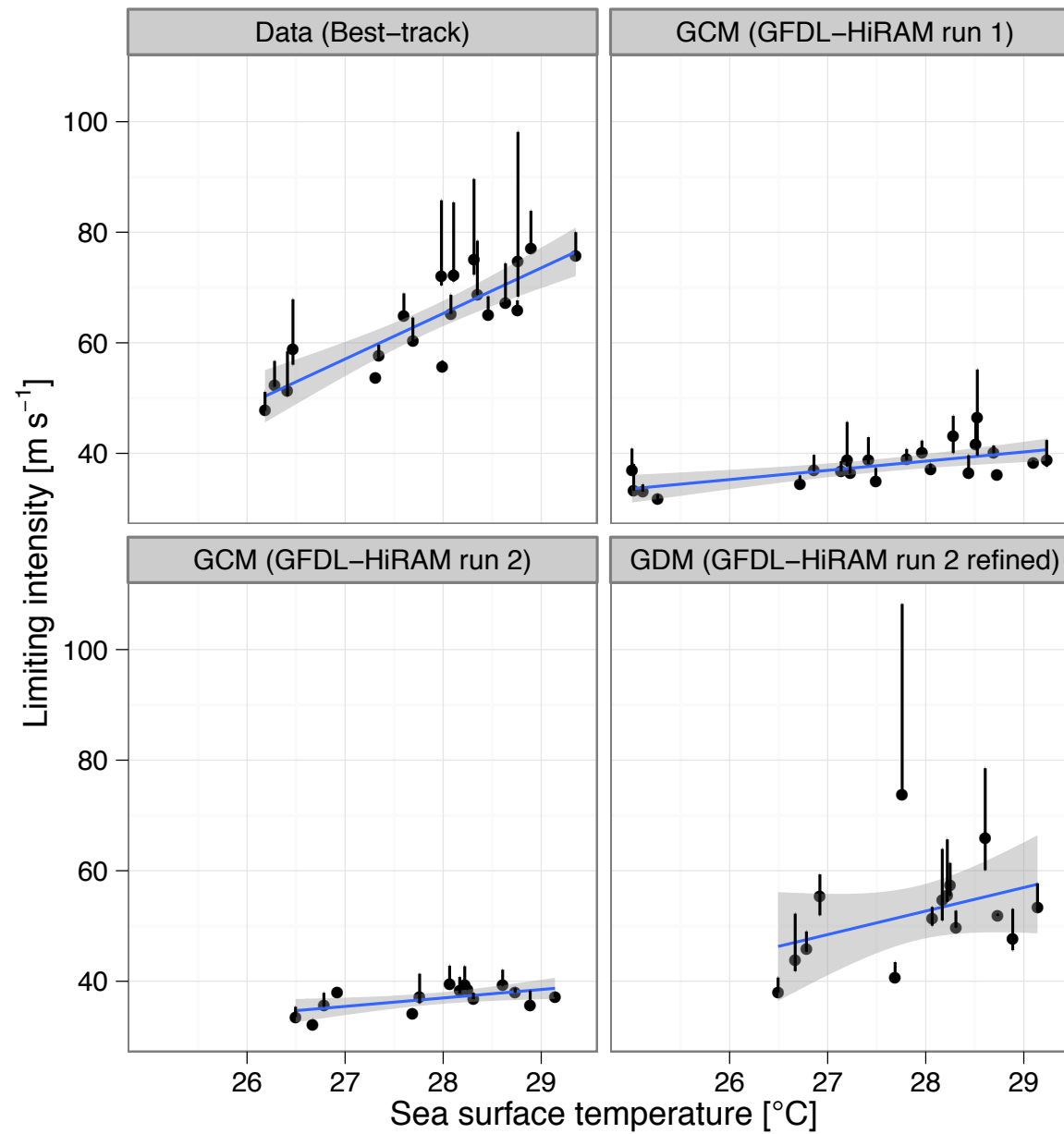


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