Cannon Institute for Global Studies, 3rd Aug. 2017

Comment from the perspective of Management of Negative Emission Technologies (MaGNET)

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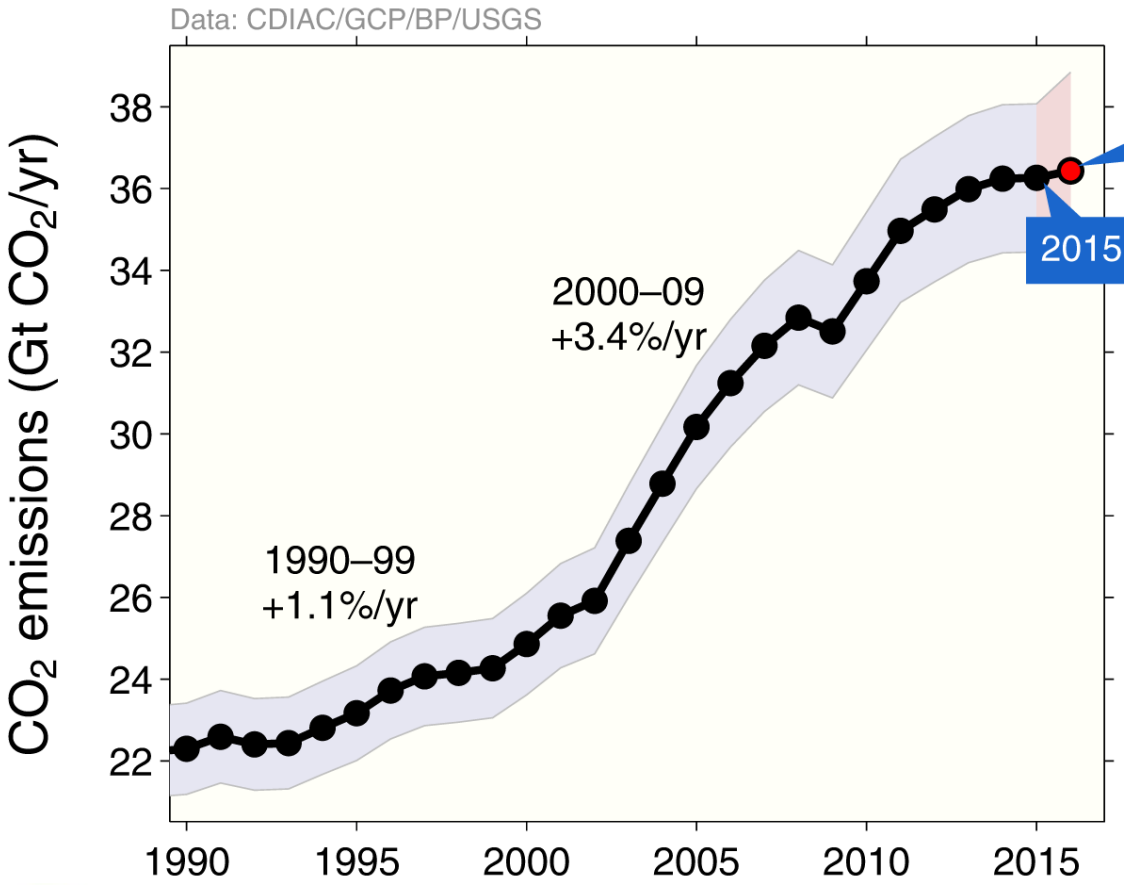
GLOBAL CARBON PROJECT

futureearth
research for global sustainability

Emissions from fossil fuel use and industry

Global emissions from fossil fuel and industry: 36.3 ± 1.8 $GtCO_2$ in 2015, 63% over 1990

● Projection for 2016: 36.4 ± 2.3 $GtCO_2$, 0.2% higher than 2015



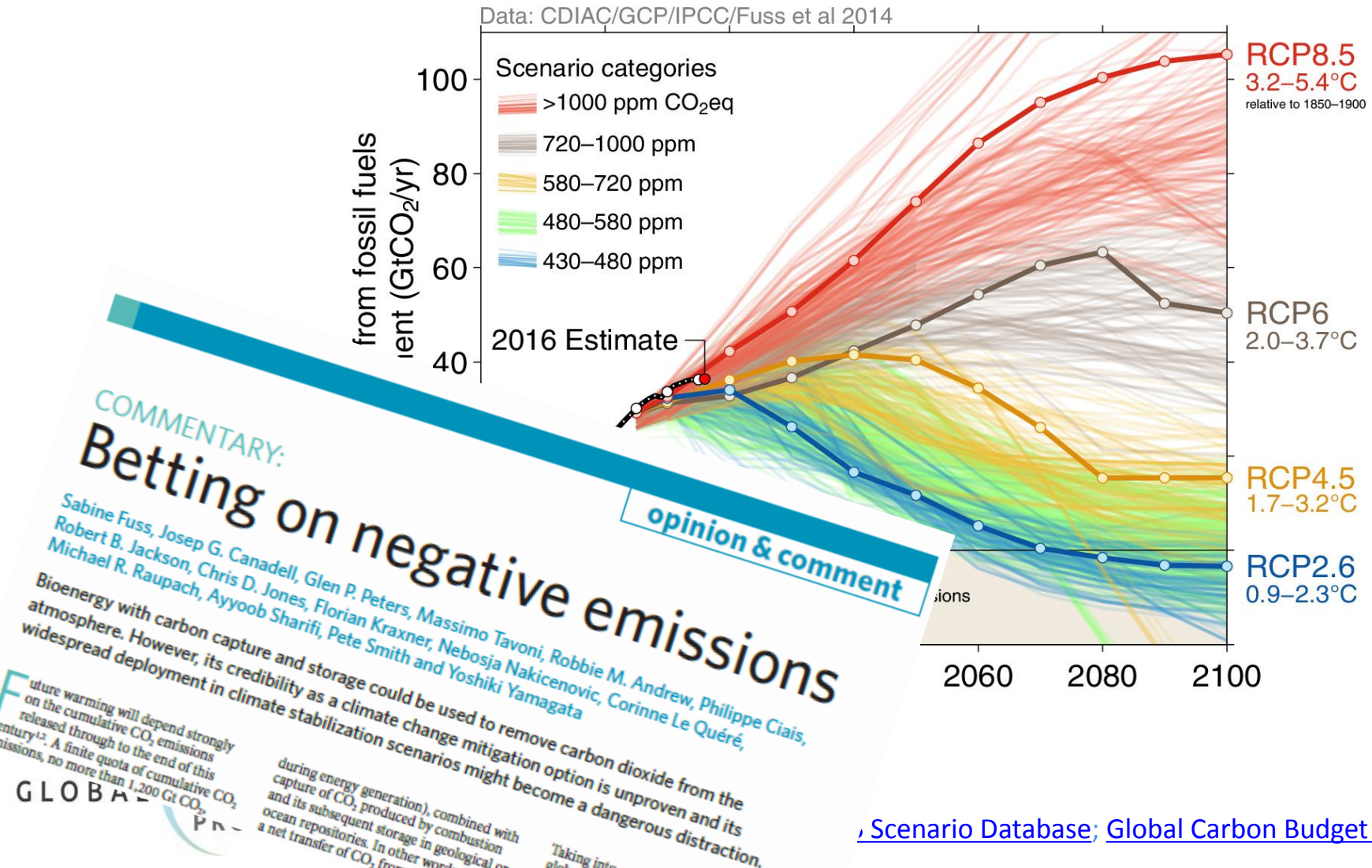
Uncertainty is ±5% for one standard deviation (IPCC "likely" range)

Estimates for 2014 and 2015 are preliminary. Growth rate is adjusted for the leap year in 2016.

Source: CDIAC; Le Quéré et al 2016; Global Carbon Budget 2016

Observed emissions and emissions scenarios

The emission pledges to the Paris Agreement avoid the worst effects of climate change (4-5°C)
Most studies suggest the pledges give a likely temperature increase of about 3°C in 2100



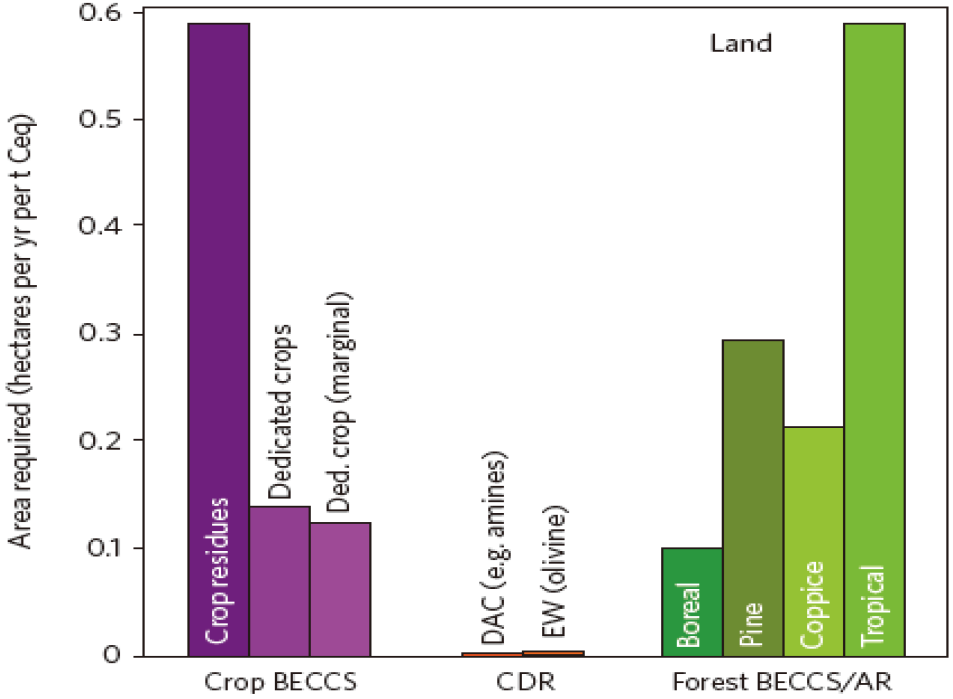
, Scenario Database; Global Carbon Budget 2016

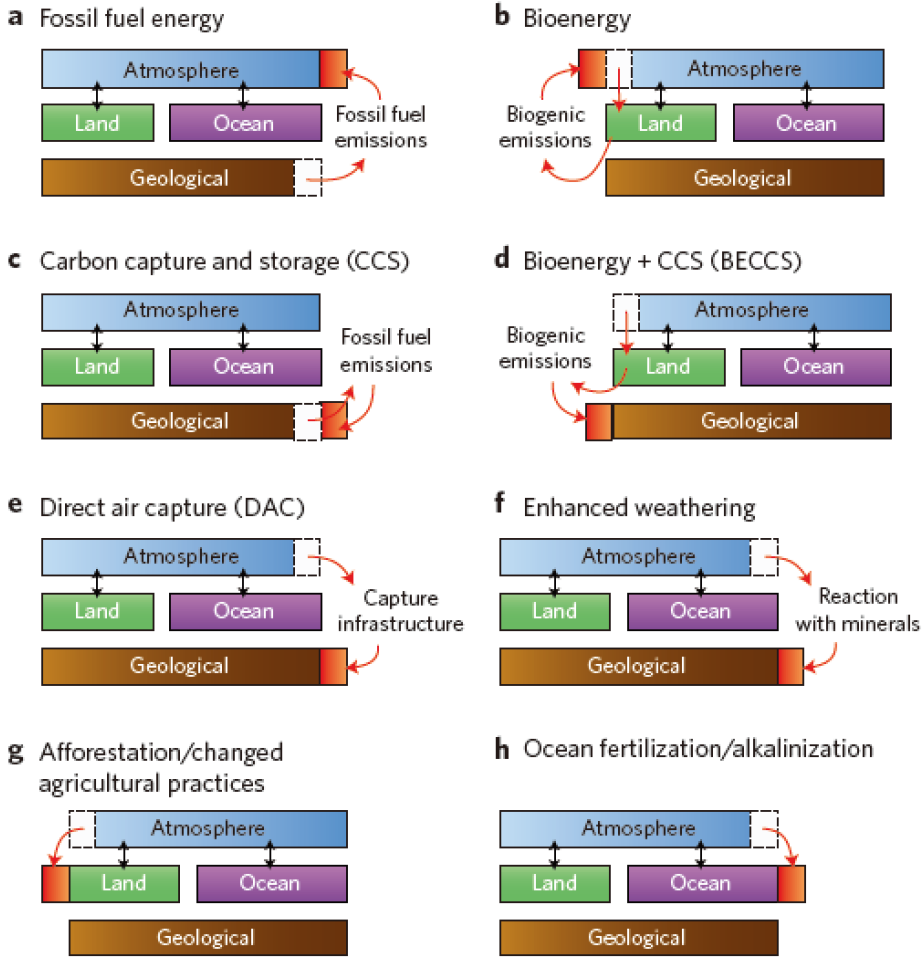
NE impacts on land

REVIEW ARTICLE
PUBLISHED ONLINE: 7 DECEMBER 2015 | DOI: 10.1038/NCLIMATE2870
nature climate change

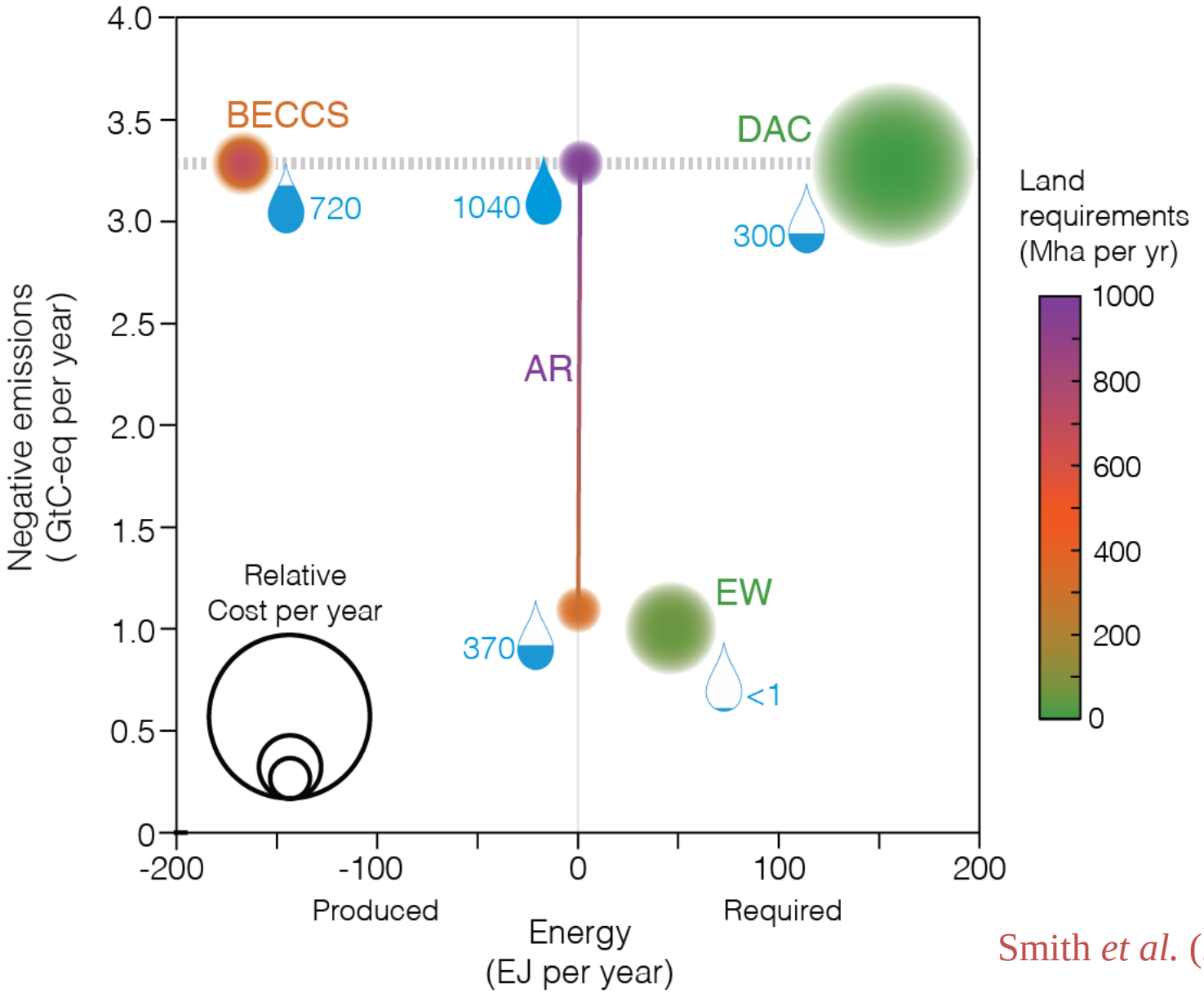
Biophysical and economic limits to negative CO_2 emissions

Pete Smith[1*], Steven J. Davis[2], Felix Creutzig[3,4], Sabine Fuss[3], Jan Minx[3,5,6], Benoit Gabrielle[7,8], Etsushi Kato[9], Robert B. Jackson[10], Annette Cowie[11], Elmar Kriegler[5], Detlef P. van Vuuren[12,13], Joeri Rogelj[14,15], Philippe Ciais[16], Jennifer Milne[17], Josep G. Canadell[18], David McCollum[15], Glen Peters[19], Robbie Andrew[19], Volker Krey[15], Gyami Shrestha[20], Pierre Friedlingstein[21], Thomas Gasser[16,22], Arnulf Grübler[15], Wolfgang K. Heidug[23], Matthias Jonas[15], Chris D. Jones[24], Florian Kraxner[15], Emma Littleton[25], Jason Lowe[24], José Roberto Moreira[26], Nebojsa Nakicenovic[15], Michael Obersteiner[15], Anand Patwardhan[27], Mathis Rogner[15], Ed Rubin[28], Ayyoob Sharifi[29], Asbjørn Torvanger[19], Yoshiki Yamagata[30], Jae Edmonds[31] and Cho Yongsung[32]





NE impacts on land



Smith *et al.* (2015)