**Fast climate change drives pronounced changes in species’ genetic diversity**

**1st paragraph text body**

**General introduction**

The background for the problem:

Tracking of suitable environments under past climate change have been detected for numerous species {Lorenzen:2012kw, Hewitt:2004gj}. The velocity of climate change is a central factor for species response to climate change {Loarie:2009gx}. Forecasted unprecedented high values of climate velocity suggest that many species would not be able to track suitable environments {Schloss:2012gt}, leading to changes in the patterns of genetic diversity of species {Hofreiter:2009dr}. It is expected that species under stable climatic conditions reach stationary demographic conditions and subsequently stable levels of genetic diversity. Oppositely, Counterintuitively, based on simulations, fast range contractions better preserve species levels of genetic diversity {Arenas:2012bv}. Expectations under different scenarios of change are … .Differences in the responses of species’ genetic diversity to fast and slow climate change have not yet been explored.

1. Estimates of future climate change velocity are expected to be high (Raquel’s paper, , Loarie et al (2009),
2. Darwin suggested that species in stable climatic conditions should be in demographic stasis.
3. For fast changes, both erosion (Raquel) and increase in genetic diversity (arenas) have been proposed
4. The Significance:
5. responses of the genetic diversity of species to fast and slow climate change have not been explored yet. (Basically we do not know much)
6. Knowing how species responded to previous fast and slow changes in climate will increase our knowledge to better predict future responses to the expected fast climate change.

Serra-Diaz, J.M. et al (2014) Bioclimatic velocity: the pace of species exposure to climate change, Diversity and Distributions 20 (2) 169-180

Schloss, C.A. et al (2012) Dispersal will limit ability of mammals to track climate change in the Western Hemisphere. Proceedings of the National Academy of Sciences 109(22): 8606-8611)