Mesoscale Eddies: The Weather of the Ocean Transcription

OK. So I gave a little sneak-peek of the data that we collected. I just want to generally mention that a lot of the maps that I have been showing are schematics with quantities that have been averaged over a long time scale. The closer you look at the ocean the more detail it reveals. Maps like this are schematics. You saw the video where you probably got a better impression of how the ocean would really work.

As an example I want to show you the atmosphere. It turns out the physics work very similarly in both fluids and gases considered by oceanographers and atmospheric scientists. This would be an average climatological map where you see the Bermuda High that I've shown before, this large high pressure system over the North Atlantic.

Then you look into more detail and as you probably know these are actual weather systems. Those systems would be averaged out if you looked at a map like before. At least in the atmosphere the weather has been shown to have an influence over the mean state of the atmosphere.

The features that we see in the SPURS area are in terms of physics are the weather of the ocean. They are just way smaller due to the different density of the ocean. They are also harder to observe. For the first this actually shows the model, these are not the observations. From what I've seen so far from the observations, the model reproduces rather well at least the scales and the general appearance of the ocean in the SPURS area. I thought this would be a nice thing to show.

You can see that this doesn't resemble a patch at all. It's very turbulent, and you see these fresh intrusions in the model as well as in the data. I hypothesize that they have a very high potential to change the variability of sea surface salinity in this region. By that, this water feeds into the shallow water overturning circulation. It will be important for the global climate, and the global ocean circulation.

My part of it is basically right now in my PhD thesis I will try to get a grip on the whole variability of this system, and I 'm going to explain this for a second. As I mentioned before this is just a schematic of wrapping up what I told before.

So you get upwelling. You bring water up at the equator. Then you enhance it in fresh water and warm it up, and you bring that fresh and warm water in the SPURS region. Right now I'm working on the link here on how the fresh water moves in this region. There is definitely a component that wind pushes it this way due to Ekman transport.

I describe the mesoscale eddies which is the weather of the ocean mixing in the fresh water into this region. From there in the winter it basically gets exported below the surface and brought back here and creates this shallow overturning circulation and I hope that during the course of my PhD I will be able to put some constraints on how much these dynamic effects we saw here influenced variability in

the SPURS region. There are a lot of other great aspects that you can probably investigate, but this is my special interest.

I realize that I was a little fast actually, but that was my interest in the region. I hope I bought everybody to get that the fresh water cycle is really important. I quote Ed Schmidt, that we can turn our air conditioners on] a little bit higher if we have a little bit of a warming, but if anybody's crops don't get rain or too much rain, on the larger scale, that will cause a lot of trouble which gives another motivation to understand the fresh water cycle and I think SPURS contributes highly to this undertaking.