Beware The Northeast Quadrant

As of now it looks like Iselle, after hitting the Big Island, will pass south of the other islands. If it does, Oahu may get brushed by the north side of the hurricane. As discussed below, the northeast quadrant of the hurricane has the strongest winds, the most wind shear and the highest storm surge. So, the fact that the center passes to the south does not mean that we are out of the woods. We still need to be concerned.

WHY ARE CERTAIN REGIONS OF A HURRICANE STRONGER?

The **hurricane** is a spinning mass of thunderstorms. These storms form in bands that spin around the center of circulation. The winds are strongest near the center of circulation. This region is called the **eye wall**. The closer a place is to the eye wall the stronger the winds can be expected to be.

The onshore region of a hurricane tends to be stronger. When a hurricane makes landfall the wind will be coming from the ocean toward the land (onshore) on one side of the hurricane and the wind will be coming from the land toward the ocean (offshore) on the other side of the hurricane. The onshore winds are stronger because there is less **friction** over the ocean surface. The storm surge is the strongest in this region also since the winds are piling ocean water toward the land.

On the onshore side of a hurricane the hurricane's forward motion combines with the storm relative wind velocity. Thus, this also contributes to winds being stronger on the onshore side especially for faster moving hurricanes. As air moves from the water onto land it is sheared. The land slows the

wind down somewhat while the wind speeds aloft remain at a stronger intensity. This produces vertical **speed shear**. Friction also turns the wind more toward lower pressure over the land. This produces vertical directional shear. This enhanced shear with the presence of thunderstorms increases the likelihood of **tornadoes**. Thus, it is common for a **tornado watch** to be issued for the Northeast quadrant of a hurricane. This quadrant is the region that often experiences onshore flow.