1 Additional Tracking Results

1.1 Example 1

Example 1 and 2 show two successful examples of predicted trajectory [green] throughout whole life cycle of hurricane with length of 20 time steps (60 hours) compared with ground truth [white].
1.2 Example 2
1.3 Example 3

This example contains a long trajectory of a hurricane for 80 time steps. At the end of the trajectory after $t = 63$, it shows an example of failure case. As the hurricane is diminishing, the target hurricane becomes smaller and weaker. The tracking model fails to locate the target once the sign of hurricane becomes negligible. We discuss that the reason for the quality degradation of density map as the sign of hurricane is diminishing is because the model fails to locate center of target in density-map regression and all pixel values in density map are averaged out.
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2 Additional Synthesized Hurricane Results

The images below show additional examples of the synthesized data using our hurricane data augmentation model adapting conditional-GAN. Left column shows surface level pressure channel, and the right column depicts wind speed vectors (horizontal axis is U850 and vertical axis is V850 channel, respectively). The proposed hurricane data augmentation model succeed to mimic key properties of hurricane such as low surface level pressure at the center and circular spinning pattern of wind vectors rotating counterclockwise around the center in northern hemisphere as air travels from areas of high pressure to low pressure.