README: TC Diurnal Pulse Archive

This README includes details on methodology, data sets used, how to download the graphics in the archive, and associated citations found here and in the archive. Descriptions of graphics generated are included on each storm page in the archive.

Methodology

The graphics in this archive use the two objective metrics created by and detailed in Ditchek et al. (2019a) and Ditchek et al. (2019b) to identify pulse type and electric activity for Atlantic basin tropical cyclones. The archive starts in 2005, the year of the first, complete, Atlantic basin tropical cyclone season monitored by The World Wide Lightning Location Network (WWLLN; Rodger et al. 2019).

Data Sets Used

- Hurricane Database (HURDAT2; Landsea and Franklin 2013)
- Statistical Hurricane Intensity Prediction Scheme (SHIPS; DeMaria and Kaplan 1994, 1999; DeMaria et al. 2005)
- GridSat-B1 IR brightness temperatures (Knapp et al. 2011) were acquired from NOAA's National Centers for Environmental Information.
- WWLLN, a collaboration among over 50 universities and institutions, provided the lightning location data. Note that adjustment factors applied to WWLLN data varied by year S. N. Stevenson 2022, personal communication): 1) for 2005–14, the North Atlantic basin adjustment factors used in Stevenson et al. (2018) were applied, 2) for 2015–20 the adjustment factors of 3.3, 3.4, 3.6, 3.5, 3.0, and 3.0 calculated using the same method as in Stevenson et al. (2018) were applied, and 3) for 2021 and later adjustment factor of 3.0 was applied given a leveling off in calculated values.

How To Download Graphics

- **Lifetime Track & Intensity Graphic:** Right click the graphic and select "save image as". The graphic will be saved with the name STORMYY_track.png, where YY is the 2-digit year.
- **Lifetime Diurnal Pulse Activity Graphic:** Right click the graphic and select "save image as". The graphic will be saved with the name STORMYY_azav_wwlln.png, where YY is as above.
- **Diurnal Pulse Evolution Graphic:** Right click the graphic and select "save as". The graphic will be saved as a PDF with the name STORMYY.pdf, with one page for each image pair, where YY is as above.
  - There are several ways online to convert a PDF to a gif, images, or video, if desired.
  - If you would like to separate the pages of the PDF, you can use Adobe Acrobat to do so by 1) exporting each PDF page as a different file or 2) saving the PDF as a PNG, which creates different files for each page.

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