

Visualizing Meridionally-propagating Rossby Waves in the Atmosphere

Here we use a very simple approach that involves computing temporal and zonal anomalies. There are other ways to filter the fields.

In this example, we consider Jan 1983 and the NCEP-NCAR reanalysis, but the dates and dataset are easily changeable. We can visualize the wave train using geopotential height at 850 mb,

[http://iridl.ldeo.columbia.edu/expert/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/\(850\)/VALUE/T/\(Jan%201983\)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/\(850\)/VALUE/T/\(Jan%201970\)/\(Jan%202000\)/RANGE/T/12/STEP/%5BT%5Daverage/sub/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/\(850\)/VALUE/T/\(Jan%201983\)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/\(850\)/VALUE/T/\(Jan%201970\)/\(Jan%202000\)/RANGE/T/12/STEP/%5BT%5Daverage/sub/%5BX%5Daverage/sub/X/Y/fig%3A/colors/thinnish/solid/%7C/contours/countries_gaz/%3Afig/Y/-90/90/plotrange/#expert](http://iridl.ldeo.columbia.edu/expert/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/(850)/VALUE/T/(Jan%201983)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/(850)/VALUE/T/(Jan%201970)/(Jan%202000)/RANGE/T/12/STEP/%5BT%5Daverage/sub/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/(850)/VALUE/T/(Jan%201983)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.phi/P/(850)/VALUE/T/(Jan%201970)/(Jan%202000)/RANGE/T/12/STEP/%5BT%5Daverage/sub/%5BX%5Daverage/sub/X/Y/fig%3A/colors/thinnish/solid/%7C/contours/countries_gaz/%3Afig/Y/-90/90/plotrange/#expert)

or using the streamfunction

[http://iridl.ldeo.columbia.edu/expert/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/\(850\)/VALUE/T/\(Jan%201983\)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/\(850\)/VALUE/T/\(Jan%201970\)/\(Jan%202000\)/RANGE/T/12/STEP/%5BT%5Daverage/T/\(Jan\)/VALUE/sub/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/\(850\)/VALUE/T/\(Jan%201983\)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/\(850\)/VALUE/T/\(Jan%201970\)/\(Jan%202000\)/RANGE/T/12/STEP/%5BT%5Daverage/sub/%5BX%5Daverage/sub/X/Y/fig%3A/colors/thinnish/solid/%7C/contours/countries_gaz/%3Afig/Y/-90/90/plotrange/#expert](http://iridl.ldeo.columbia.edu/expert/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/(850)/VALUE/T/(Jan%201983)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/(850)/VALUE/T/(Jan%201970)/(Jan%202000)/RANGE/T/12/STEP/%5BT%5Daverage/T/(Jan)/VALUE/sub/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/(850)/VALUE/T/(Jan%201983)/VALUE/SOURCES/.NOAA/.NCEP-NCAR/.CDAS-1/.MONTHLY/.Intrinsic/.PressureLevel/.psi/P/(850)/VALUE/T/(Jan%201970)/(Jan%202000)/RANGE/T/12/STEP/%5BT%5Daverage/sub/%5BX%5Daverage/sub/X/Y/fig%3A/colors/thinnish/solid/%7C/contours/countries_gaz/%3Afig/Y/-90/90/plotrange/#expert)

In this particular case, we can see that the source of the wave train is the Pacific Warm Pool, and that a two similar wave patterns propagate in the Northern and Southern Hemisphere.