Objective: Use GFMS rainfall and streamflow data for regional flood monitoring.

There are three parts to this exercise:
1) Learn GFMS features: navigation, zoom, selecting parameters
2) Analyze streamflow over Texas
3) Analyze flood detection/intensity at a given location

Part 1: Learn GFMS features: navigation, zoom, selecting parameters
- Go to http://flood.umd.edu/
- Scroll down and note three maps:
  i) Flood Detection/Intensity (depth above threshold [mm])
  ii) Streamflow 12 Km resolution [m³/s]
  iii) Rainfall (7 – day accum) [mm]
• Click on the drop down options in ‘Plot different variables’ and note the variables available:
  o Flood Detection (Depth)
  o Streamflow 12km res.
  o Streamflow above Threshold
  o Streamflow 1km res.
  o Surface storage 1km res.
  o Inundation map 1km res.
  o Routed runoff 12km res.
  o Rainfall (inst.)
  o Rainfall (1-day)
  o Rainfall (3-day)
  o Rainfall (7-day)
• Select each variable and click on ‘Plot’ and note the units of each variable
• Go to the middle map or select ‘Streamflow 12 km res. [m3/s]’ from ‘Plot different variables’
• Using ‘Zoom In / Zoom out’ and ‘Pan the Map’ panel, zoom in over Texas and Oklahoma.

**Part 2: Analyze streamflow over Texas and Oklahoma**
• Enter Start Time: 00Z12May2015 and End Time: 21Z15May2015
• Click on ‘Animate’
• Observe the shaded river channels and the shaded areas outside the river channels that show on-surface runoff.
• Observe how the streamflow changes in the major rivers
• Note down the range of the streamflow amount (include units)
• Select ‘Rainfall (3-day)’ from the drop-down options in ‘Plot different variables’ and click on ‘Plot.’ Repeat the animation for the same times as above.
• Note how the rainfall changes over Texas and how the streamflow animation relates to the rainfall change.

**Part 3: Analyze flood detection/intensity at a given location**
• Select ‘Flood Detection (Depth)’ from the drop-down options in ‘Plot different variables’ and click on ‘Plot.’
• Enter Start Time: 00Z12May2015 and End Time: 21Z15May2015
• Click on ‘Animate.’
• The shaded areas show where the streamflow is above flood threshold. Note how the flood depth changes in different rivers.
• Note the highest flood depth observed in the Texas rivers during this time period.
• To the right of the map, go to ‘Plot time series for an individual point (lat,lon):’
• Enter the following lat-lon in the boxes: 35.56 and –94.52 (This location is on the Red River)
  o T1: 00Z01May 2015
  o T2: 21Z15Jun2015
• Click on ‘See time series.’
• You will get a time series of flood intensity. Note how many flooding episodes occurred at this location during the selected period.
• Click on the map to select another lat-lon location over Texas, or enter another pair of lat-lon in the boxes and plot the Flood Detection (Depth) time series.