Classification of EWEs based on the antecedent state of the N. Pacific Jet
EXTREME WARM EVENTS
Eastern U.S. – N. Plains Cluster (1)

** X’s below are colored by quadrant of the phase diagram **

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

94 events
Eastern U.S. – S. Plains Cluster (2)

**X’s below are colored by quadrant of the phase diagram**

EVENTS DURING SEPT. – MAY PROJECTED ONTO PHASE DIAGRAM

Each point is an average of the PCs for 3–7 days prior to the event

84 events
Eastern U.S. – Northeast Cluster (3)

**X’s below are colored by quadrant of the phase diagram**

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### Event Centroids

- **Poleward Shift**
  - 20 events

- **Retraction**
  - 10 events

- **Equatorward Shift**
  - 17 events

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Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

61 events
Eastern U.S. – All Events

** X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

239 events
Western U.S. – Pacific NW Cluster (1)

**X’s below are colored by quadrant of the phase diagram**

- **Poleward Shift**
- **Retraction**
- **Equatorward Shift**
- **Extension**

**89 events**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event
Western U.S. – N. Rockies Cluster (2)

**X's below are colored by quadrant of the phase diagram**

Event Centroids

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

46 events
Western U.S. – Southwest Cluster (3)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

69 events
Western U.S. – All Events

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

69 events
EXTREME COLD EVENTS
Eastern U.S. – N. Plains Cluster (1)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

44 events
Eastern U.S. – Northeast Cluster (2)

**X’s below are colored by quadrant of the phase diagram**

Event Centroids

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

39 events
Eastern U.S. – S. Plains Cluster (3)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

48 events
Eastern U.S. – Southeast Cluster (4)

**X’s below are colored by quadrant of the phase diagram**

Poleward Shift

Retraction

Equatorward Shift

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

42 events
Eastern U.S. – All Events

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May
projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior
to the event

173 events
Western U.S. – Pacific NW Cluster (1)

**X’s below are colored by quadrant of the phase diagram**

- **Poleward Shift**
  - 18 events

- **Retraction**
  - 31 events

- **Equatorward Shift**
  - 20 events

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

78 events
Western U.S. – N. Rockies Cluster (2)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

55 events
Western U.S. – Southwest Cluster (3)

**X’s below are colored by quadrant of the phase diagram**

Event Centroids

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

63 events
Western U.S. – All Events

** X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

196 events
EXTREME PRECIP. EVENTS
Eastern U.S. – Northeast Cluster (1)

**X’s below are colored by quadrant of the phase diagram**

Event Centroids

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

37 events
Eastern U.S. – S. Plains Cluster (2)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

84 events
Eastern U.S. – Midwest Cluster (3)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

86 events
Eastern U.S. – Southeast Cluster (4)

**X’s below are colored by quadrant of the phase diagram**

Event Centroids

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

73 events
Eastern U.S. – N. Plains Cluster (5)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

48 events
Eastern U.S. – All Events

**X’s below are colored by quadrant of the phase diagram**

Event Centroids

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

328 events
Western U.S. – N. Rockies Cluster (1)

** X’s below are colored by quadrant of the phase diagram**

EOF 1
EOF 2

Poleward Shift
Retraction
Equatorward Shift
Extension

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

58 events
Western U.S. – Pacific NW Cluster (2)

**X’s below are colored by quadrant of the phase diagram**

Event Centroids

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

85 events
Western U.S. – S. Rockies Cluster (3)

**X’s below are colored by quadrant of the phase diagram**

EOF 1

EOF 2

Poleward Shift

Retraction

Equatorward Shift

Extension

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

62 events
Western U.S. – CA/NV Cluster (4)

**X’s below are colored by quadrant of the phase diagram**

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

69 events
Western U.S. – All Events

**X’s below are colored by quadrant of the phase diagram**

- **Poleward Shift**
  - 77 events

- **Retraction**
  - 61 events

- **Equatorward Shift**
  - 65 events

- **Extension**
  - 71 events

Events during Sept. – May projected onto phase diagram

Each point is an average of the PCs for 3–7 days prior to the event

274 events