**POLE TIDE TRIGGERS OF SEISMICITY**

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**Abbreviations:** PT – Pole tide, LST – Lunisolar tide
EQ – Earthquake
CMT – Harvard Centroid-Moment tensor

**DATA and METHOD**

There were used 32264 EQ events from CMT (1976-2014) to search the trace of PT in seismicity after declustering events for Mw > 7.2 by (Uhrhammer, 1986).

**Results**

- **Phase PT**
  - $\Delta t (kg) = 1.2 \text{ e}^{0.65g (0.05-1.0)}$ and $\Delta t (kg) = 1.2 \text{ e}^{0.65g (0.05-1.0)}$

- **PT generated shear $\tau$ and normal $\alpha_0$ stresses for CMT (points) against background of polar variations (X,Y).**

- **PT**
  - has an influence on seismic activity of thrust EQ with $M_{w} > 5.5$ with confidence level 0.9. Other faulting type EQ and with $M_{w} > 5.5$ are indifferent relative to PT influence.

**Frequency distribution of shear stress phase calculated for various variants of thrust EQ**

<table>
<thead>
<tr>
<th>Variants</th>
<th>Mw (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0</td>
<td>0.5</td>
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<tr>
<td>7.5</td>
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<td>8.0</td>
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**There are two maxima of PT influence on thrust EQ near both extremes (min and max) of shear stress.**

This result could explain the 0.6 year periodicity in seismic intensity.

**Conclusions**

- **Pole tide influence on seismic intensity is revealed only for thrust type of EQ with 5% reliability.**
- **This influence falls with rise of M and vanishes for $M_{w} > 5.5$.**
- **There are two maxima of this influence approximately coinciding with both extreme of shear stresses. This result could explain 0.6-year spectral peak in seismic intensity.**
- **Pole tide influence on seismic intensity for time of Pole wobble damping ($< 100$ mas) is actually noise. This could explain 6-7 year periodicity in seismic process.**
- **Symphesis of shear and normal stresses for thrust EQ type (see $\psi$ by $\psi > 90^\circ$) could explain the exciting of these EQ by weak PT induced stress variations.**

**Literature:**

- **Uhrhammer, R.** Characteristics of Northern and Central California seismicity // Earthquake Hazard. 57(1). 219.

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