$\overrightarrow{SLP(t)} \perp \overrightarrow{NAO(t)}$

$\overrightarrow{SLP}(t)$

$\overrightarrow{SLP(t)} \| \overrightarrow{NAO}(t)$

$\overrightarrow{NAOunit}(t)$

DOT PRODUCT:

$$\overrightarrow{SLP}(t) \cdot \overrightarrow{NAOunit(t)}$$

$$= |\overrightarrow{SLP}(t)| \cos\theta$$

this is done for all (lat, lon)

the result of the dot product is prmslprnaoamp2d in my GRADS script. It's only a function of (lat, lon).

then,

$$\overrightarrow{SLP(t)} \perp \overrightarrow{NAO}(t) = \overrightarrow{SLP}(t) - \overbrace{|\overrightarrow{SLP}(t)| \cos\theta \ \overrightarrow{NAOunit}(t)}^{\overrightarrow{SLP(t)} \| \overrightarrow{NAOunit(t)}}$$

$$= \overrightarrow{SLP}(t) - prmslprnaoamp2d \ \overrightarrow{NAOunit}(t)$$

$$\overrightarrow{SLP(t)} \| \overrightarrow{NAO}(t) = prmslprnaoamp2d \ \overrightarrow{NAOunit}(t)$$