PRINCESS

KF Conditional InputModel based on Residuals

* Variables
  + Water current in x direction at time t: W\_x,t
  + Water current in y direction at time t: W\_y,t
  + Water current x delta at time t: W’\_x,t
  + Water current y delta at time t: W’\_y,t
  + Residual at time t: r\_t
* Learned parameters
  + Water current delta x variance: sigma^2\_wx
  + Water current delta y variance: sigma^2\_wy
  + Residual variance: sigma^2\_r
  + Uniform distribution parameters (low, high) for random walk: u\_lx, u\_hx, u\_ly, u\_hy
  + Random walk probability: p
  + Residual transition weights: a\_1, a\_2, a\_3
* Transition equations/distributions
  + W’\_x,t+1 = Select(p -> W’\_x,t + N(0, sigma^2\_wx), 1-p -> Uniform(u\_lx, u\_hx))
  + W’\_y,t+1 = Select(p -> W’\_y,t + N(0, sigma^2\_wy), 1-p -> Uniform(u\_ly, u\_hy))
  + r\_t+1 = a\_1\*r\_t + a\_2\*W’\_x,t+1 + a\_3\*W’\_y,t+1 + N(0, sigma^2\_r)