Because it is never very far from my mind, our chatting about EWS made me think even more about such things last night. After some reflection, it seems to me that there are three things involved in a good EWS:

1. There's the usual EWS issue: Does the accumulation of data yield information about the future state (and do so at a level that is better than pure guessing or regression)?
2. External events can trigger and/or cause a shift. Hence, the EWS would need to know something about the likelihood of external events. (I'd start with assuming a Poisson distribution, as that's generally what people do, but that can probably be refined. I remember hearing a talk back in the 1980s where the speaker said that it is unlikely the average human lifespan would ever pass 130 years; on average, as (at the time) one could expect to be involved in a fatal accident every 130 years.)
3. Then there's the interaction of external events and internal states. Small events, if timed correctly, can initiate a shift. My favorite example: Suppose you are dribbling down the field, and I'm on your left shoulder as a defender. If I nudge you when your right leg is planted, then nothing happens. However, the same nudge applied when you are on your left leg may cause you to lose balance (and let me take the ball).

It is these last 2 that bother me so much about the predicting far into the future. I think that #2 and #3 would come into play long before anything involved with #1.

Additionally, there is the overall stability of a state. With sensitive enough measurements, etc., an isolated chaotic system can be predicted very far into the future. (Of course, in a chaotic system, the length of time of prediction into the future grows only logarithmically with the precision of the measurement, so if you want to predict twice as far into the future, your measurement needs to be 4 times as precise; predicting 16 times as far needs about 64k times as much precision, etc.) However, this assumes that the state in which the system is found is itself stable for at least as long as the prediction time, and again, with #2 and #3, I doubt that to be the case for many of the things we work with.

Also: Put a HPC into any EWS grant. (Say, $20k.) There could be lots of computational power needed.