Flow Forecasting with WATFLOOD® and Green Kenue™
Nicholas Kouwen PhD., PENG., F.ASCE.
Civil and Environmental Engineering, University of Waterloo
http://www.watflood.ca kouwen@uwaterloo.ca

Flow Forecast Overview: 5 Simple Steps
Takes 15 – 20 minutes
1. **Download** (automatic with task scheduler):
   - provisional WSC flow;
   - CMC CaPA precipitation;
   - CMC_Regional forecast;
   - CMC_Global forecast for the CMC domains for each data set.
2. In **Green Kenue**, convert the Grib2 format CMC model data to Green Kenue r2c files for the CMC domain(s)
3. **Extract** the CMC Regl. & Glb. model data for the WATFLOOD domain from the CMC model domain r2c (with REGL_CONV.exe & GLB_CONV.exe respectively)
4. **Execute** the Canadian Hydrological And Routing Model (CHARM™) : spin up & forecast
5. Evaluate flow forecast

The graphs on the left are an example Grand River forecast
- The x-origin is on March 1 2015
- The time of the forecast is 00:00 April 8, 2015
- The shaded hydrograph is the recorded hydrograph
- The black line hydrograph past Apr. 8 is the hydrograph that was eventually recorded (not known at the time of the forecast)
- The red hydrograph Mar. 01 to 00:00 Apr. 8 is the hindcast hydrograph based on CaPA precipitation and archived CMC Regional model forecast temperatures.
- The red hydrograph 00:00 Apr. 8 to 00:00 April 18 is the 10 day forecast hydrograph.
- The first 2 days of the forecast is based on the CMC Regional forecast
- The last 8 days of the forecast is based on the CMC Global forecast
- All recorded flows are WSC provisional hourly data
- Reservoir releases are based on target water levels – not actual releases.

Please see “Flood Forecasting Manual” on www.watflood.ca

**CAUTION REQUIRED!!** Forecast precipitation and provisional flows can be unreliable.