

Grand River 2015 Spring Flow Forecast

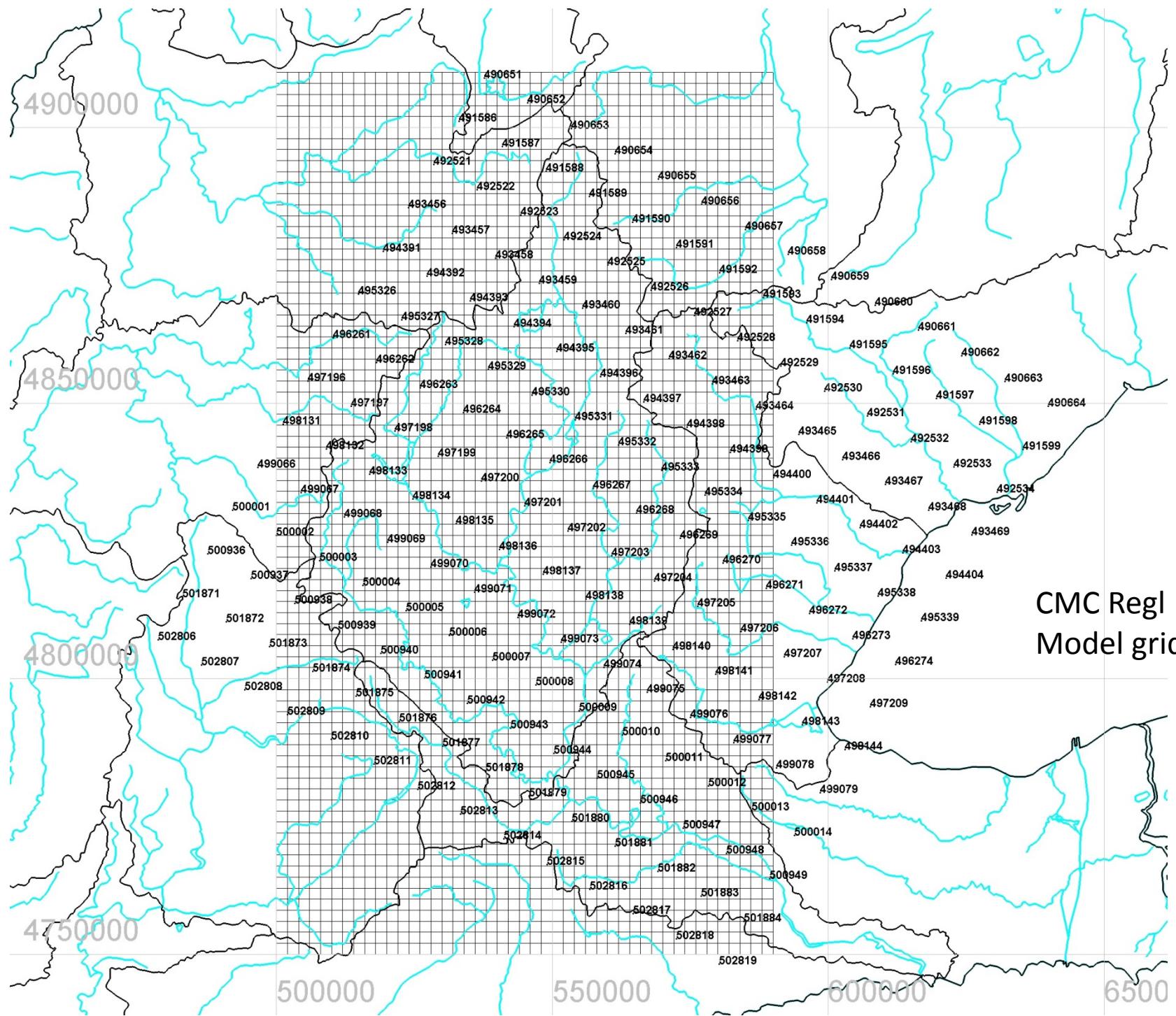
Using brute force WATFLOOD™ and Green Kenue™ (i.e. a generic manual but instructive exercise)

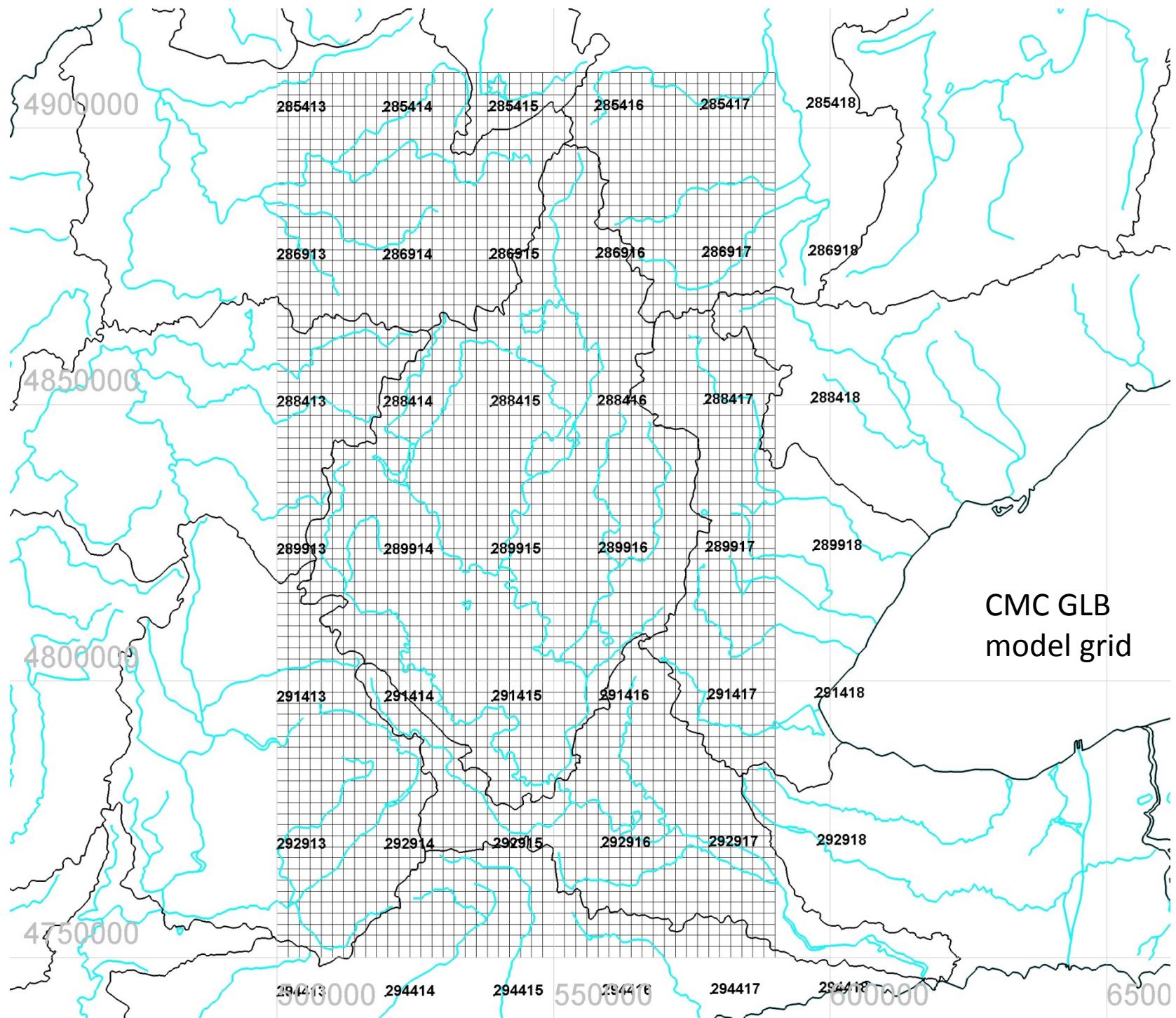
Preview CWRA Workshop, Winnipeg, June 1, 2015
<http://www.cwra2015.ca/conference-workshops/> #2

- 1st 48 hours: CMC regional forecast
- Next 8 days: CMC Global forecast
- Obs. Flows: EC - CWS provisional
- Hindcast precip. CMC RDPA - CaPA

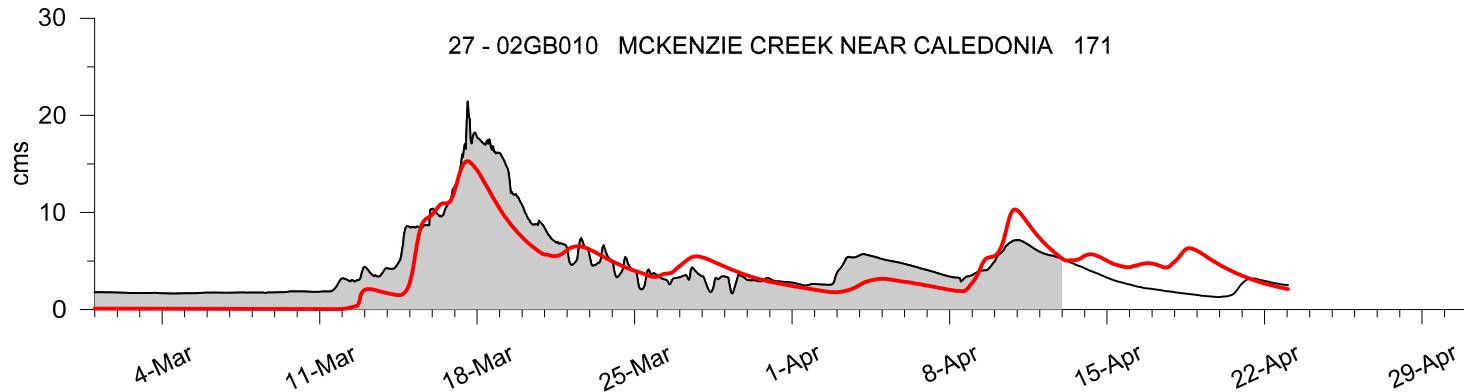
(c) N. Kouwen 2015

CMC Regl
Model grid



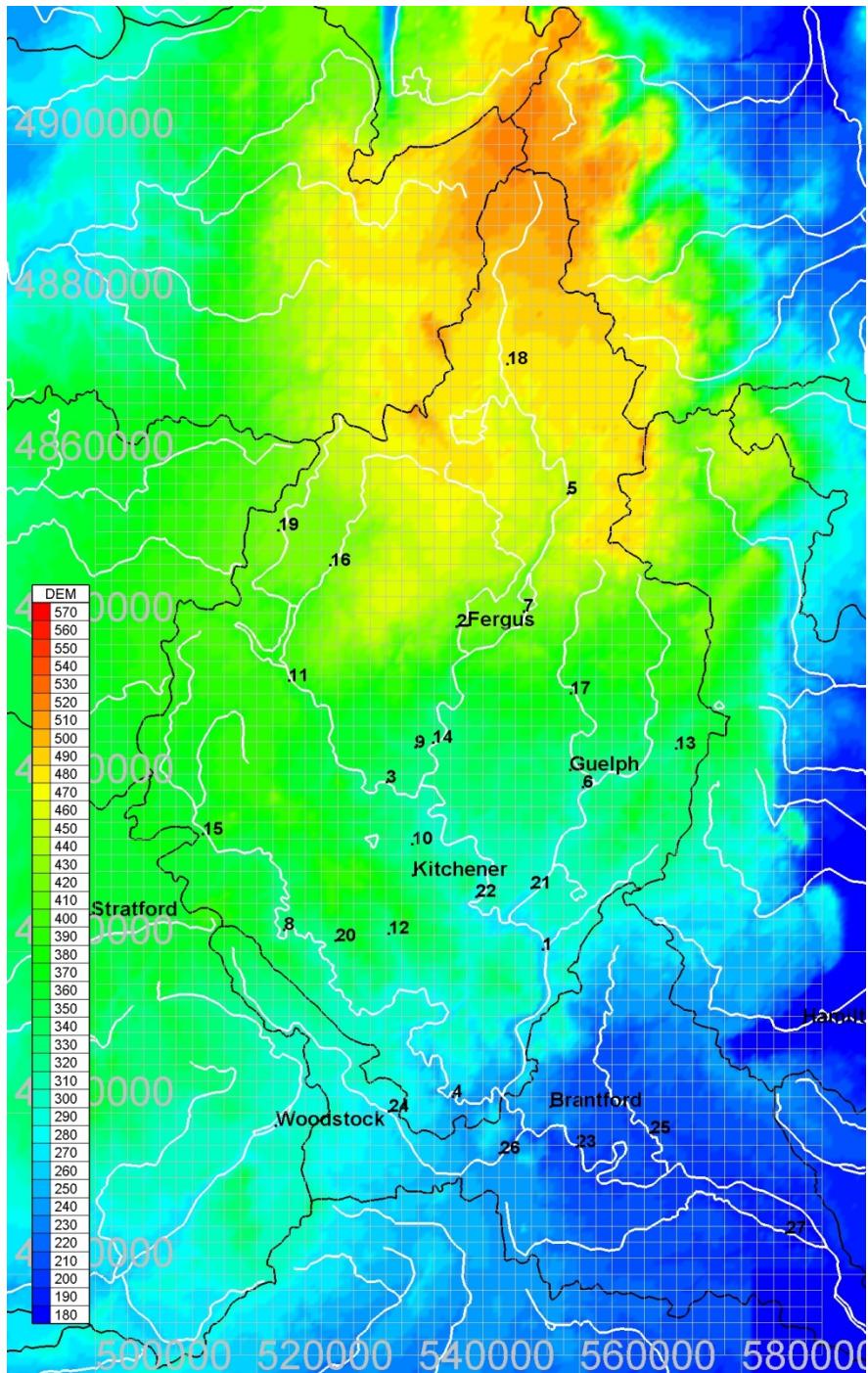


Example: 10 day forecast



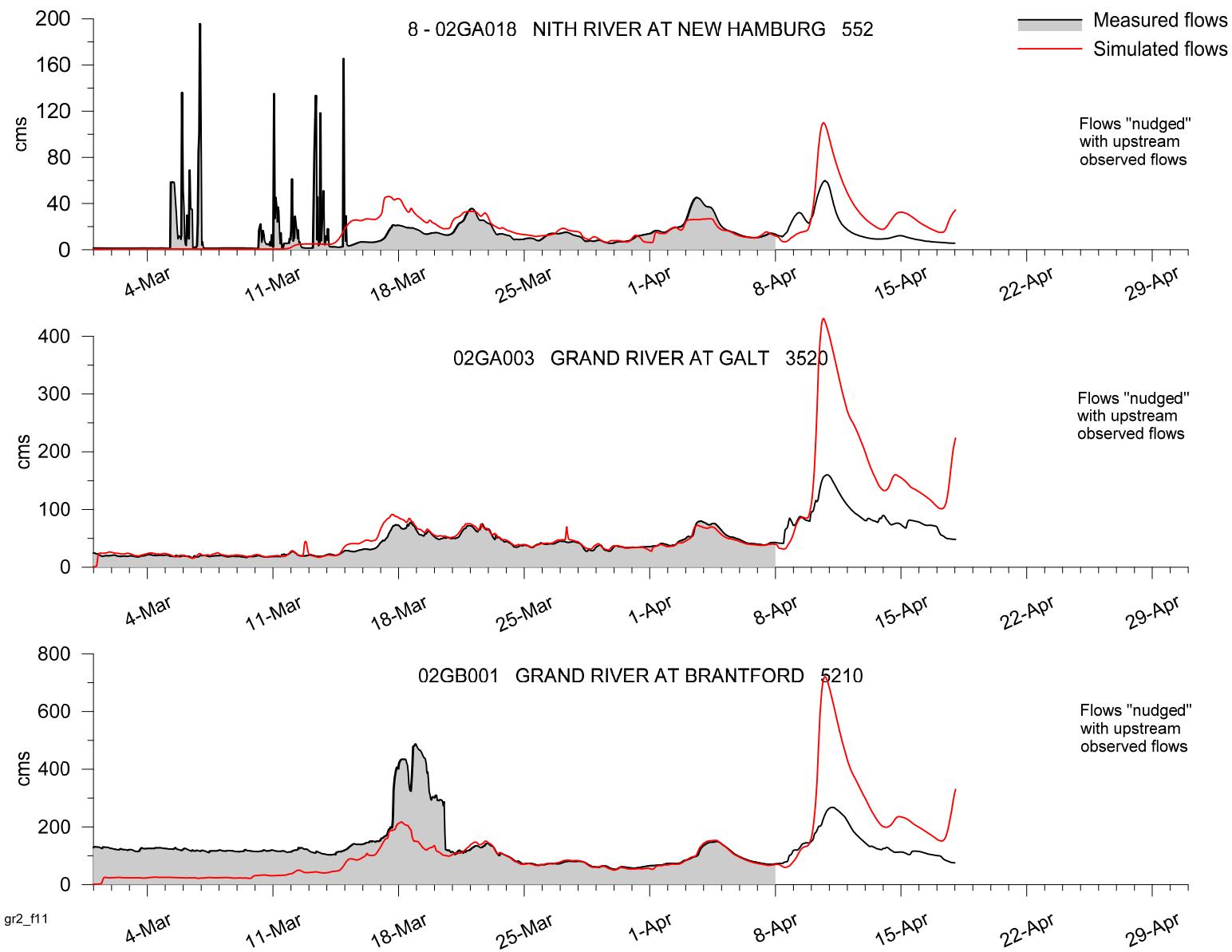
The graph above is an example of the graphs to follow.

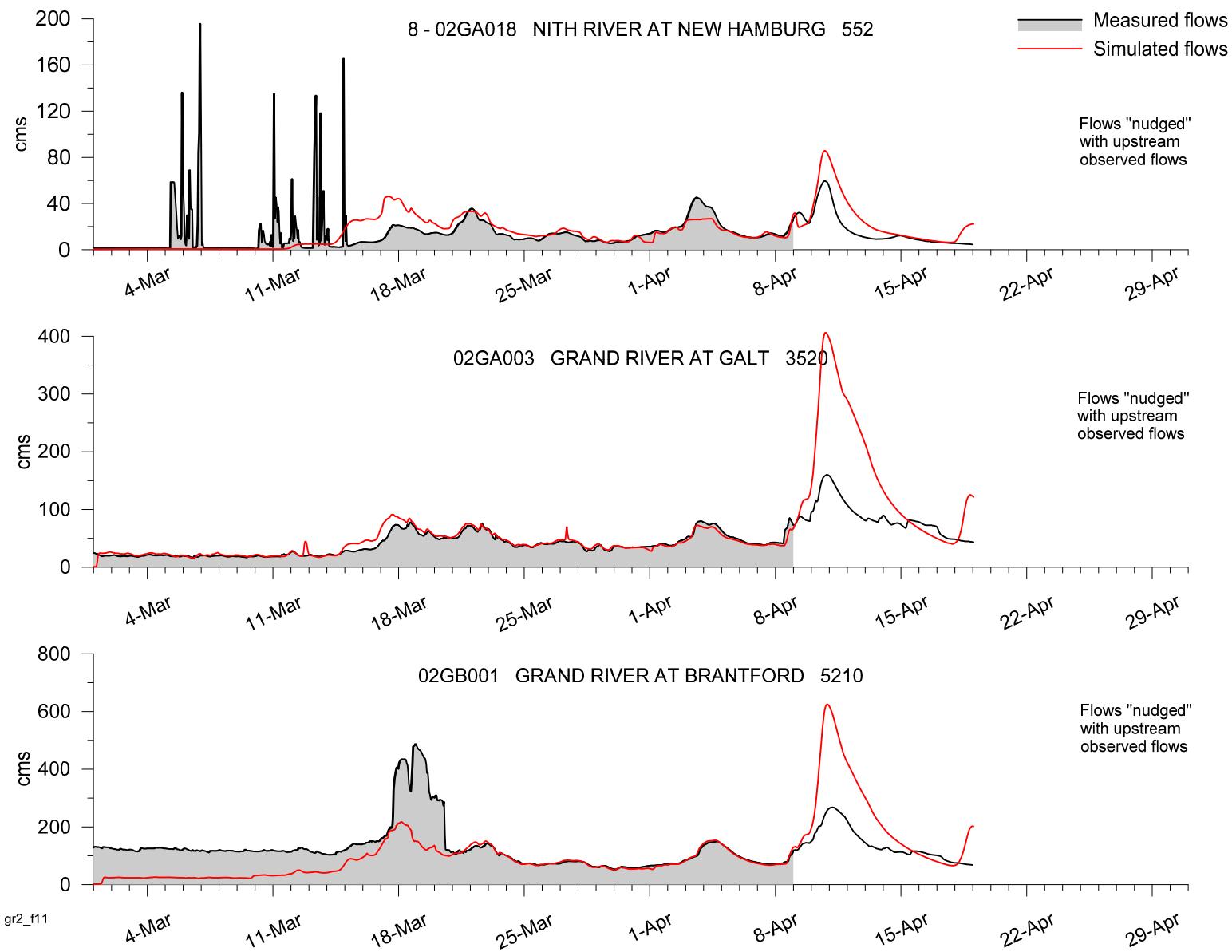
- The origin is on March 1 2015
- The time of the forecast is 00:00 April 13, 2015
- The shaded hydrograph is the recorded hydrograph
- The black line hydrograph past Apr. 13 is the hydrograph that was eventually recorded (not known at the time of the forecast)
- The red hydrograph Mar. 01 to 00:00 Apr. 13 is the hindcast hydrograph based on CaPA precipitation and archived CMC Regional model forecast temperatures.
- The red hydrograph 00:00 Apr. 13 to 00:00 April 23 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.

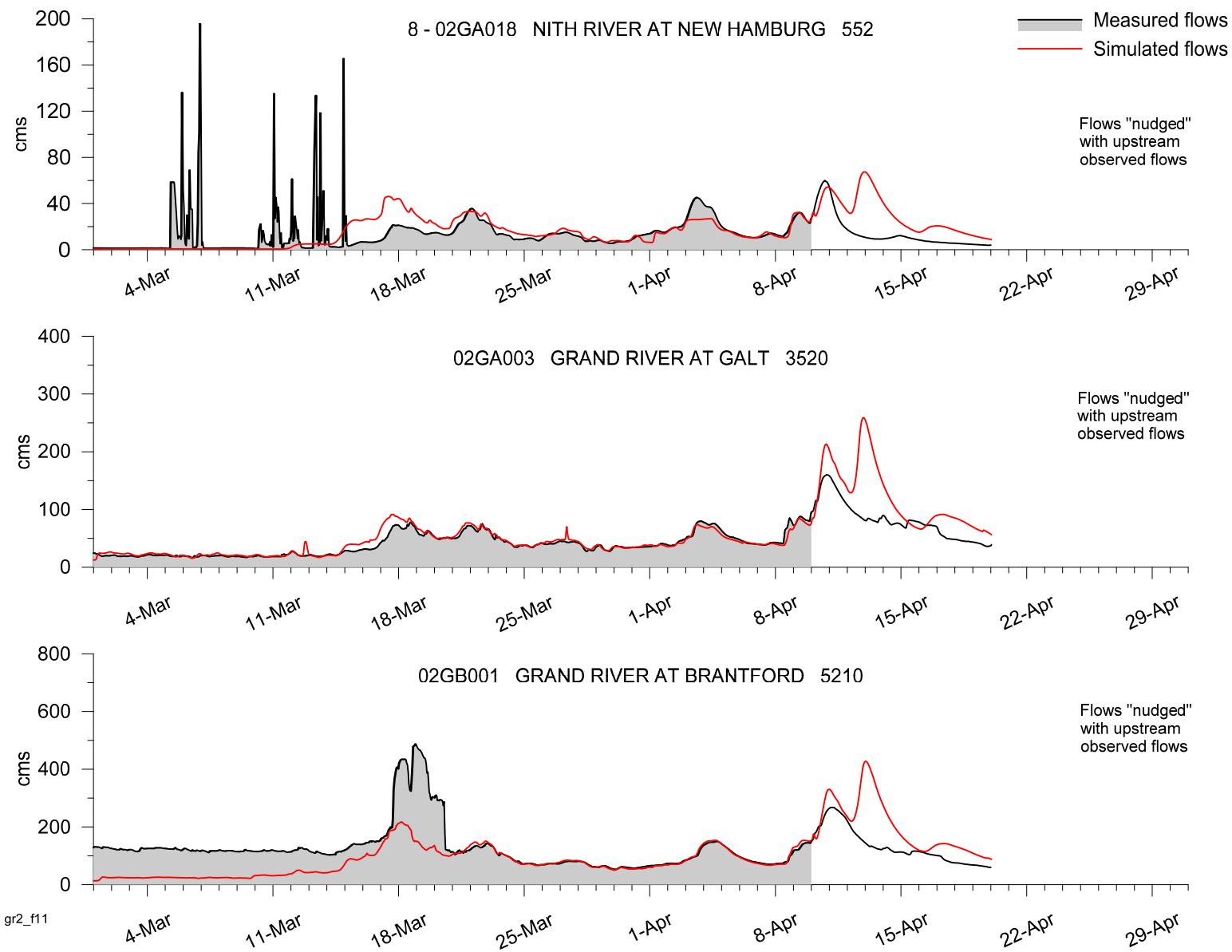


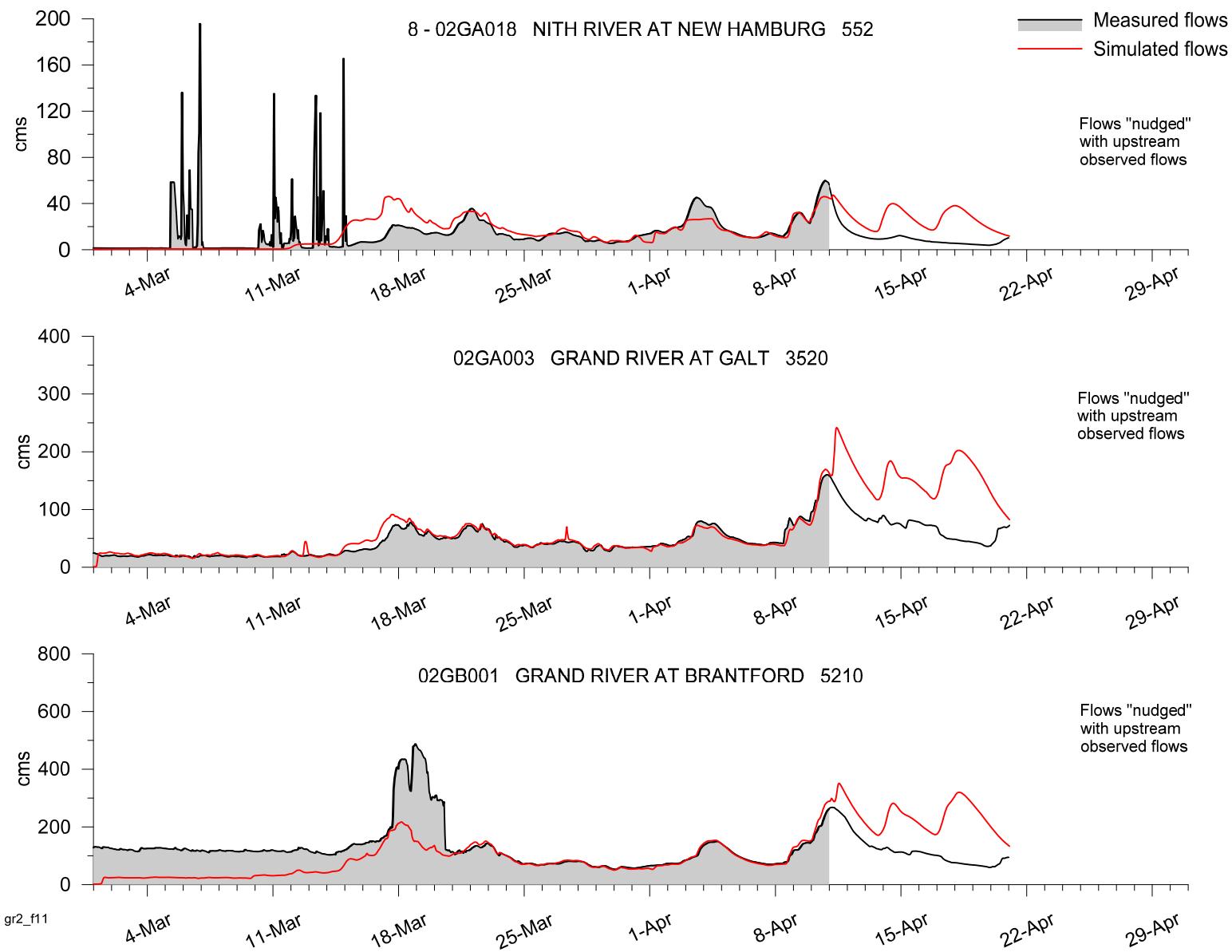
- The Grand River is located in S. Ontario, Canada
- The first set of 7 successive day forecasts is for 3 Locations along the main rivers: New Hamburg on the Nith (8), Galt-Cambridge (1) and Brantford (23) on the Grand River
- Set No. 2 is for tributaries in the upper (north) Grand River watershed (Locations 5, 16 & 17)
- Set No 3 is for tributaries in the lower (south) Grand River watershed. (Locations 25, 24 & 27)
- Flows at all stations are “**nudged**” with recorded flows upstream: i.e. computed flows are replaced by observed flows for routing downstream
- I.e. flows at New Hamburg, Galt & Brantford are based on observed flow at upstream stations and computed flows from ungauged tributaries along the intervening reaches.
- **What to look for:** How the forecast gets better with reduced lead time.
- This exercise incorporates Regional Deterministic Precipitation Analysis (RDPA – CaPA) for hindcasting

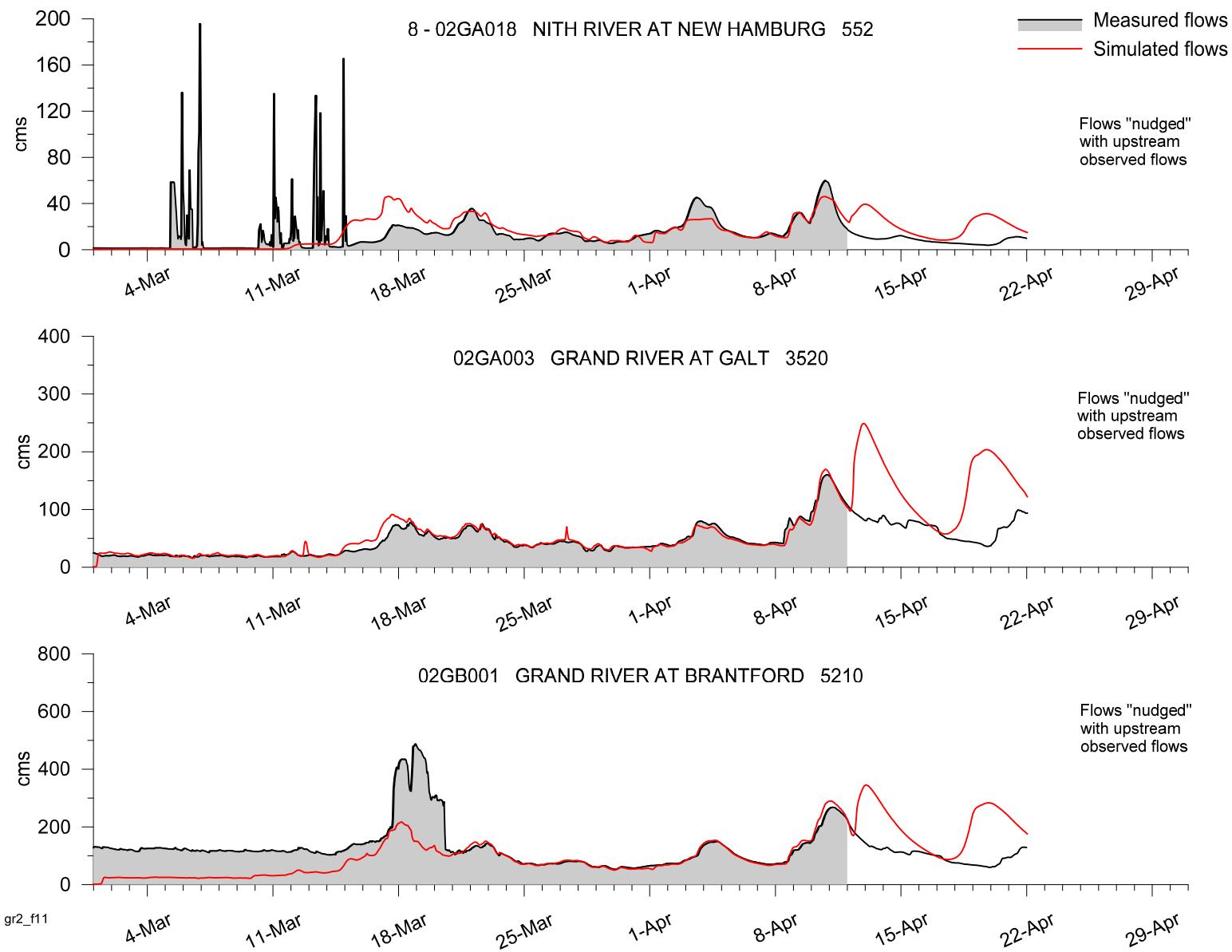
https://weather.gc.ca/grib/grib2_RDPA_ps10km_e.html

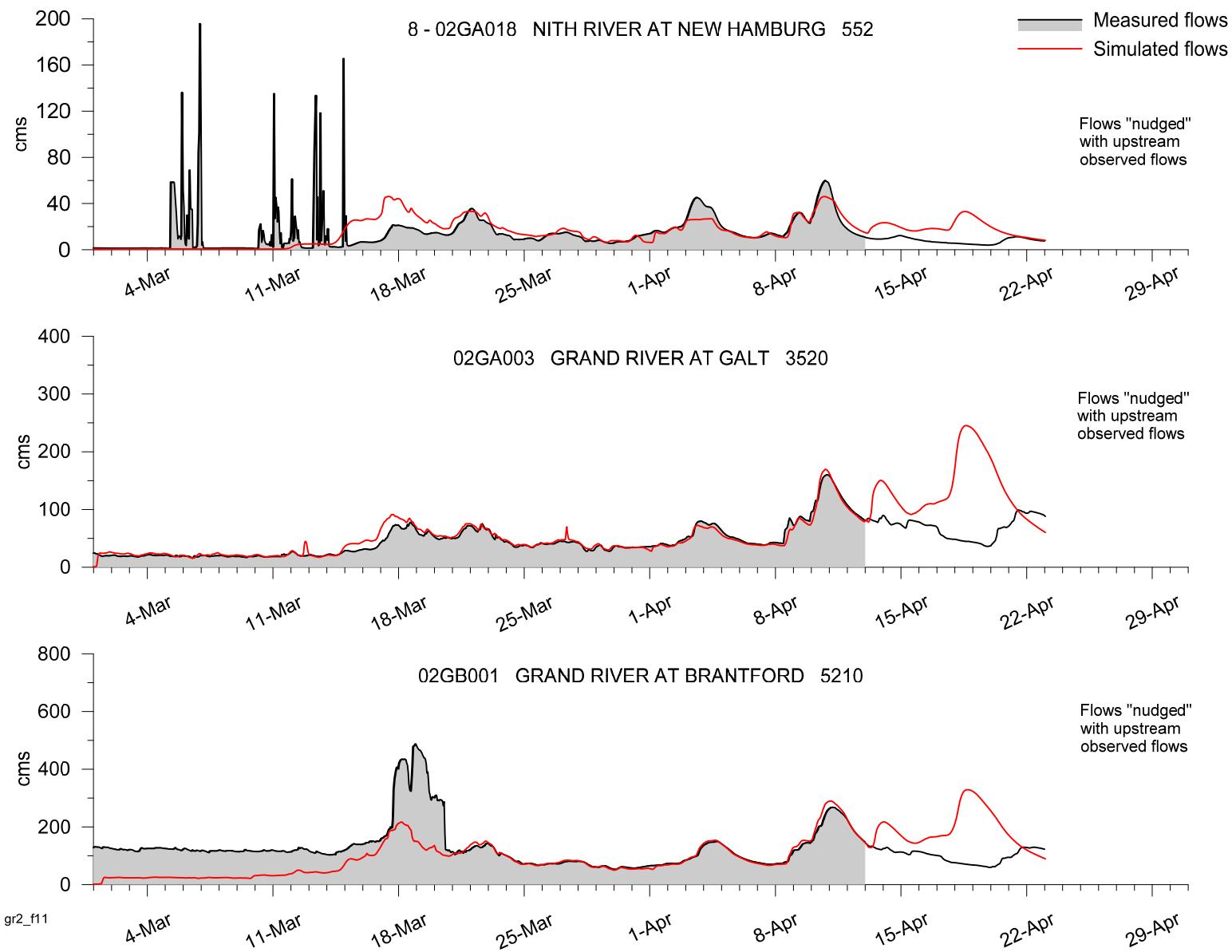


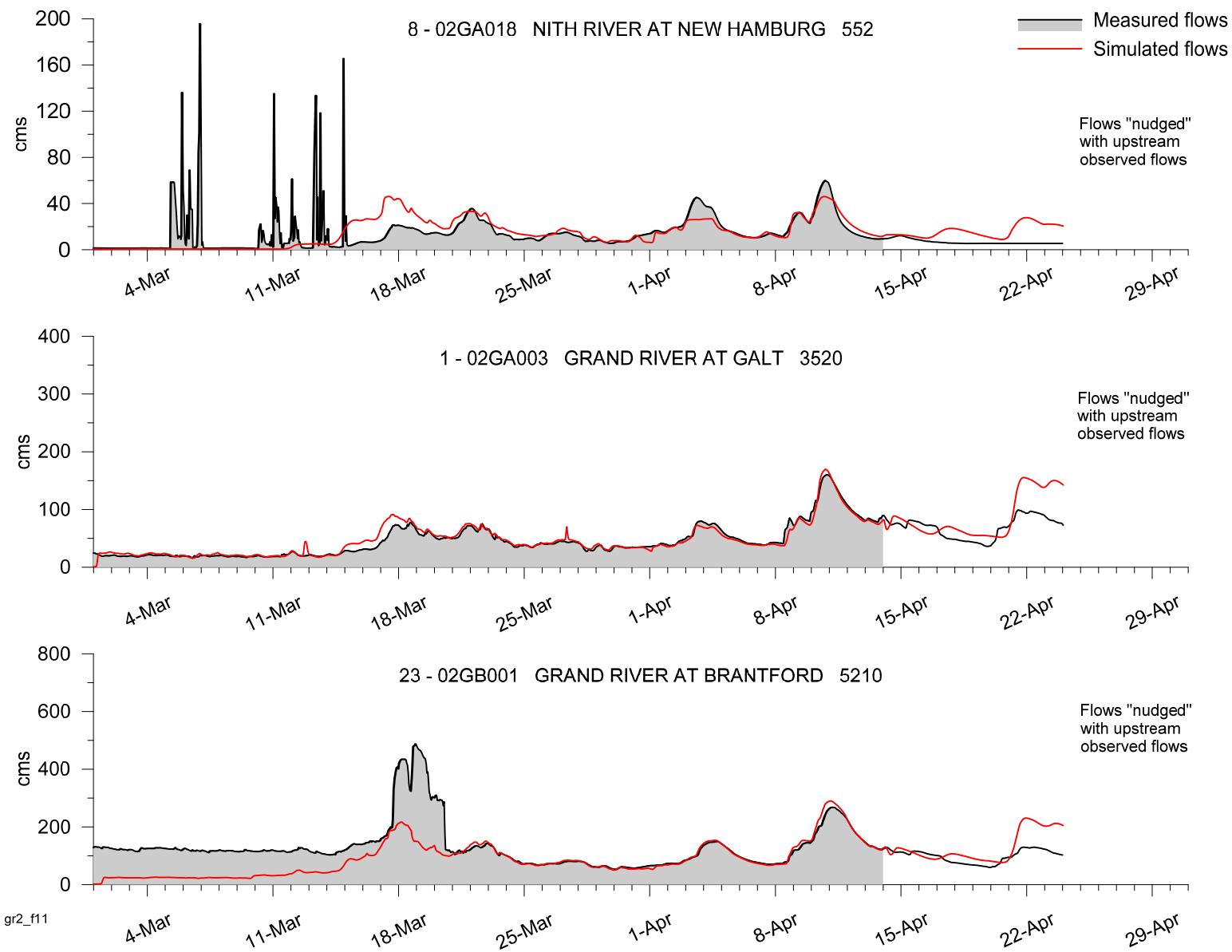


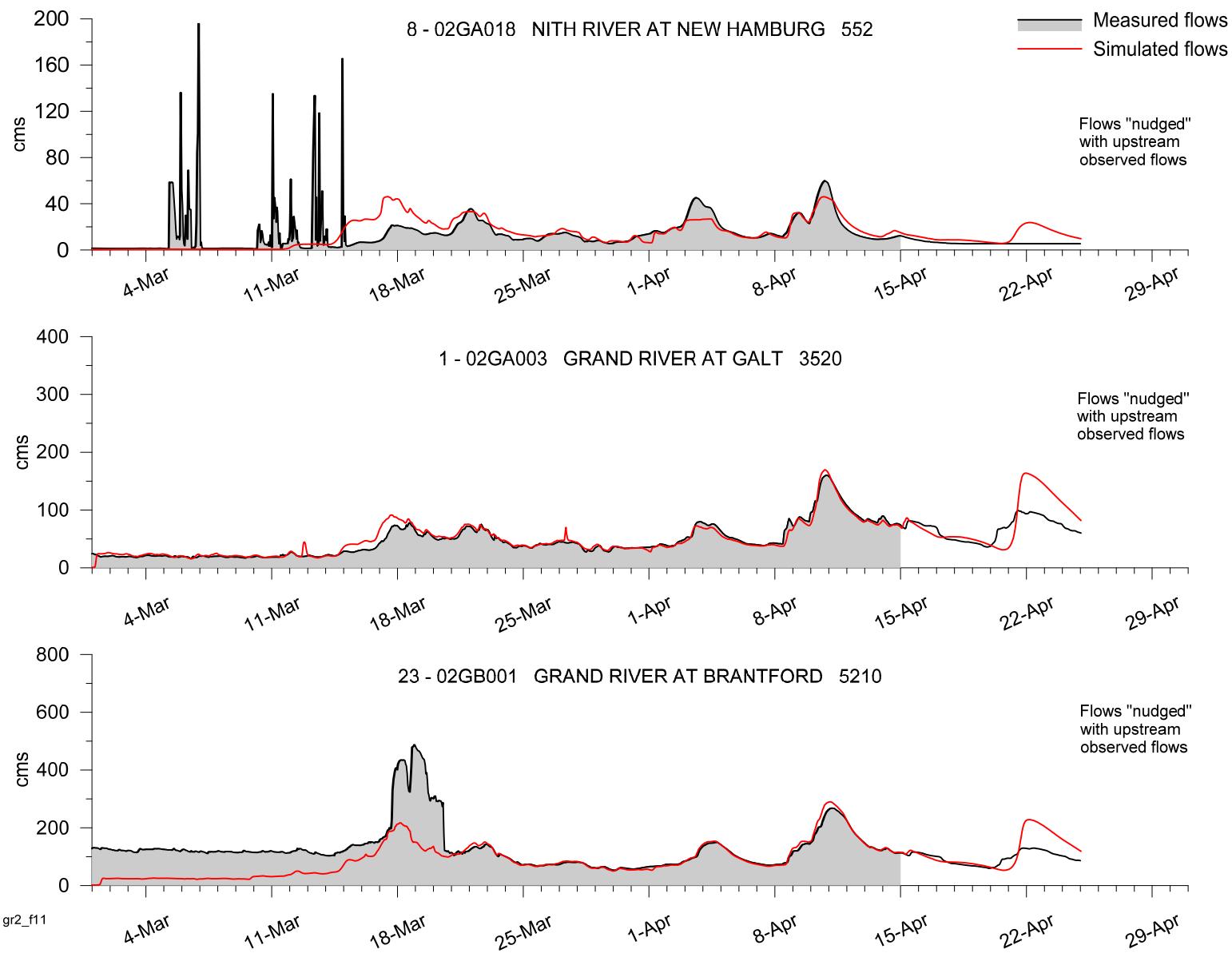




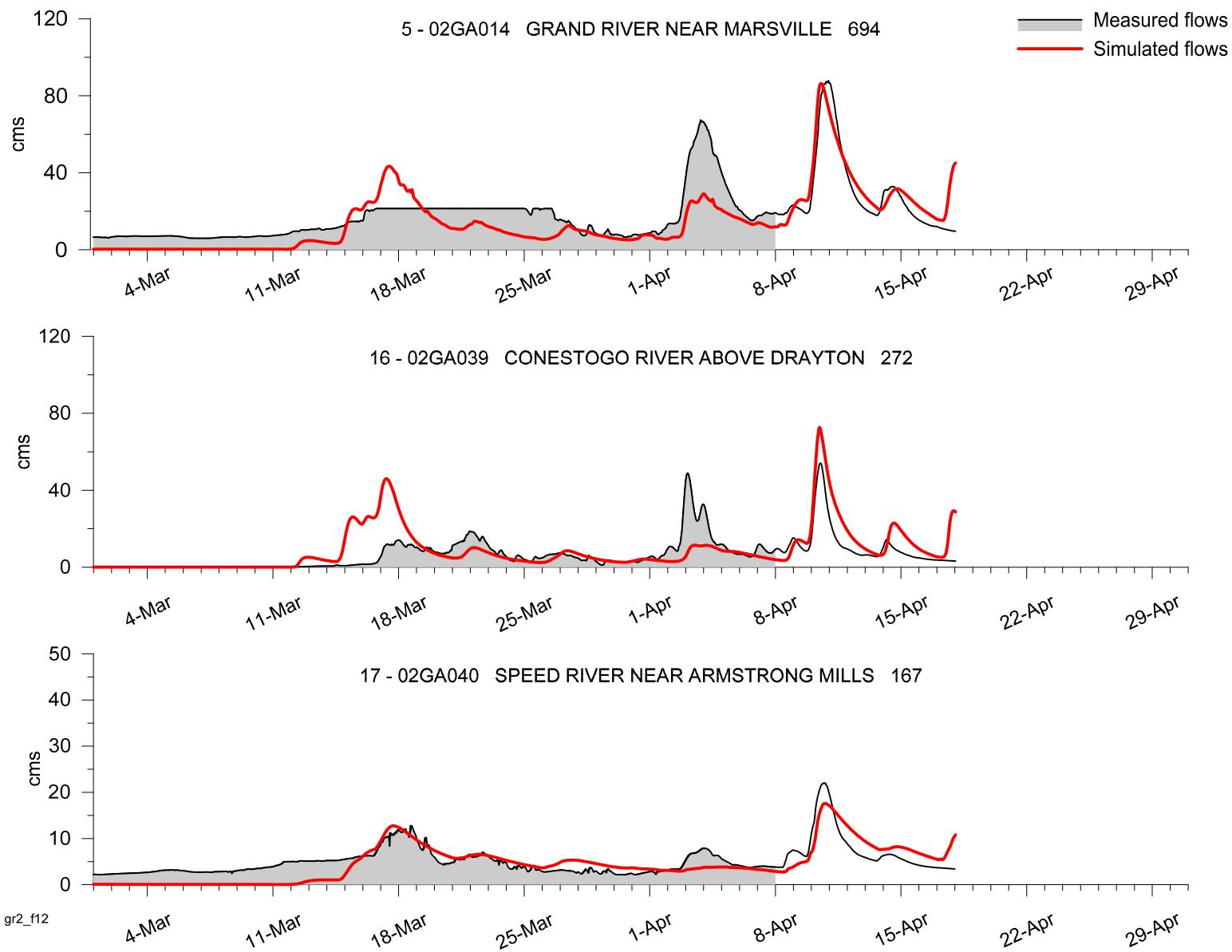


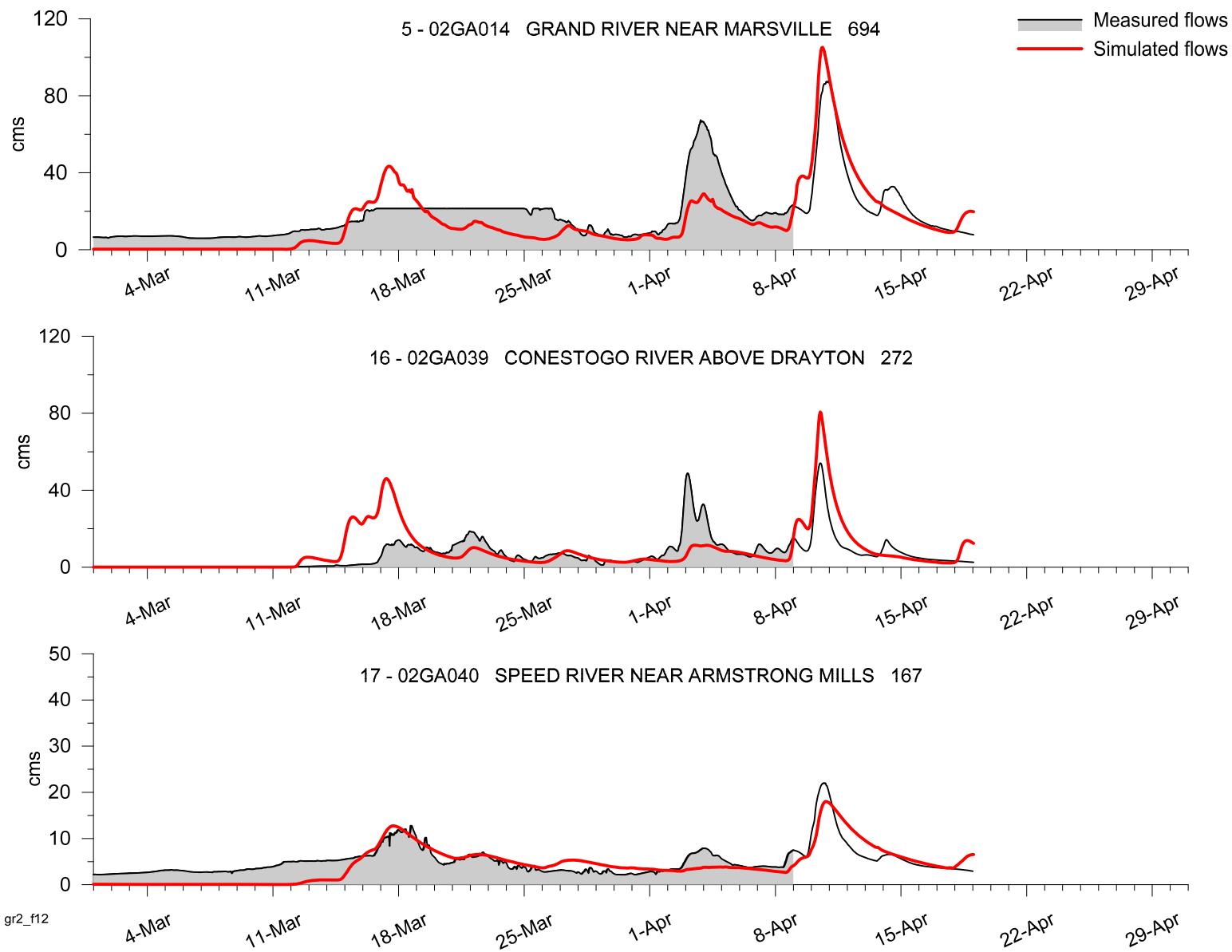


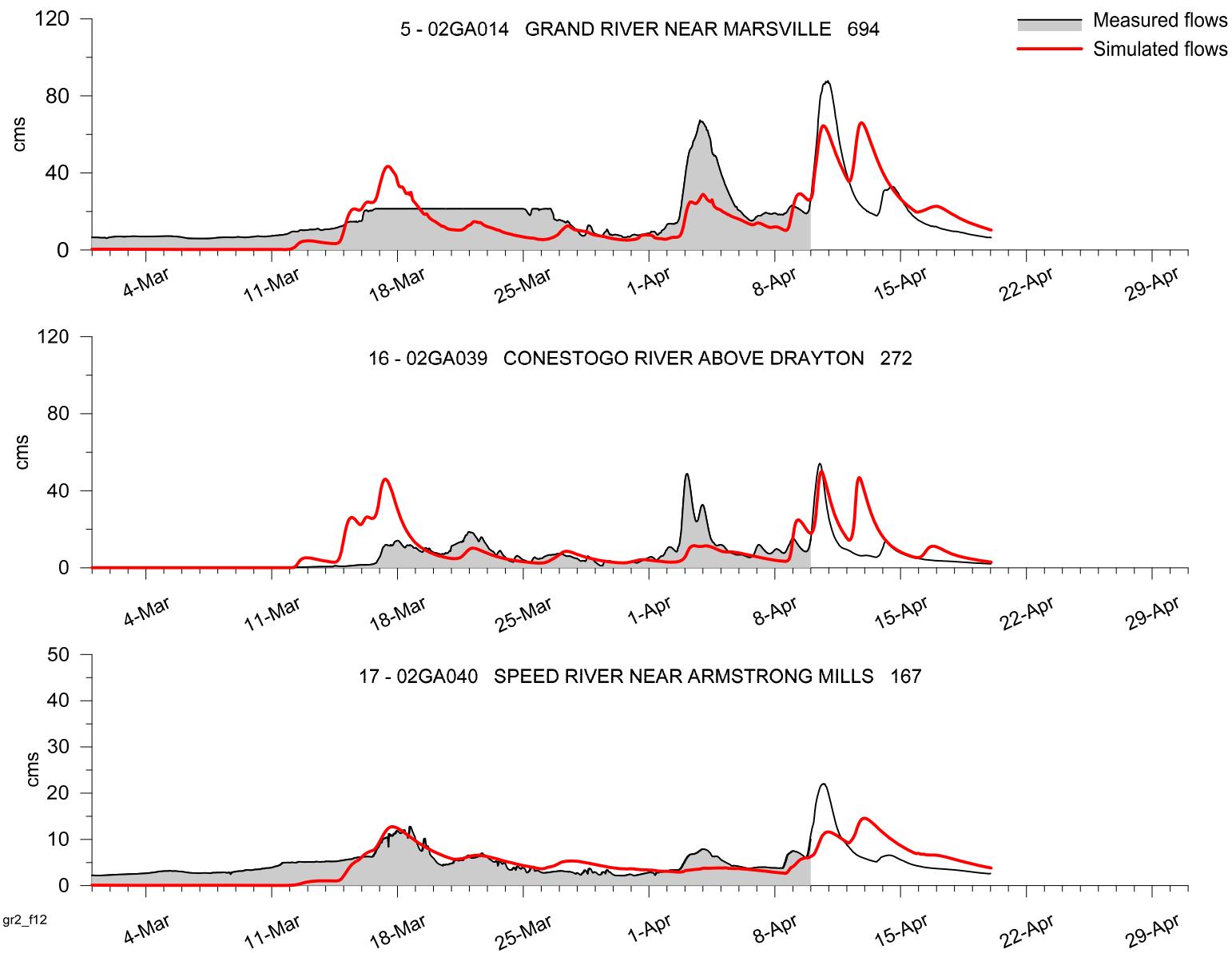


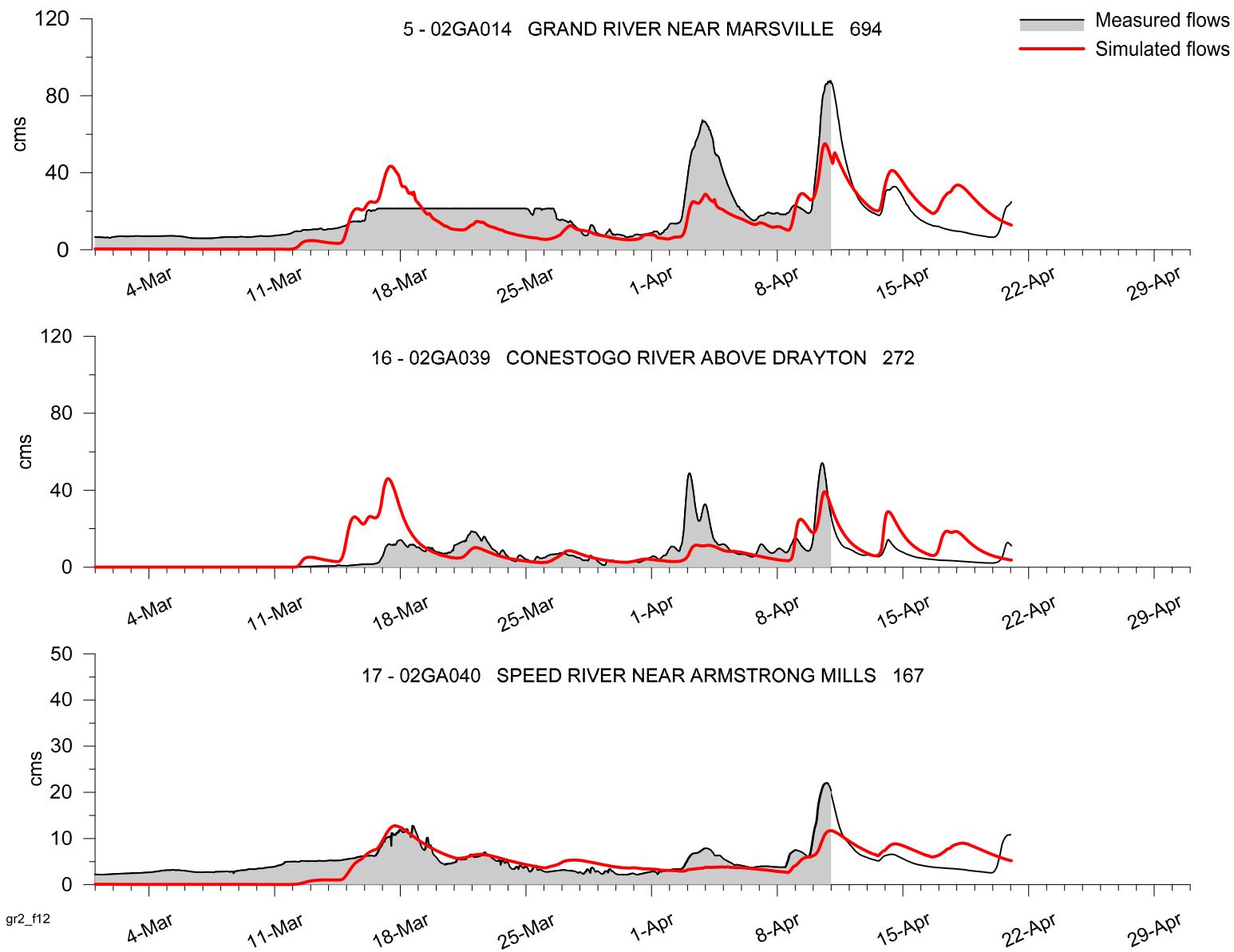


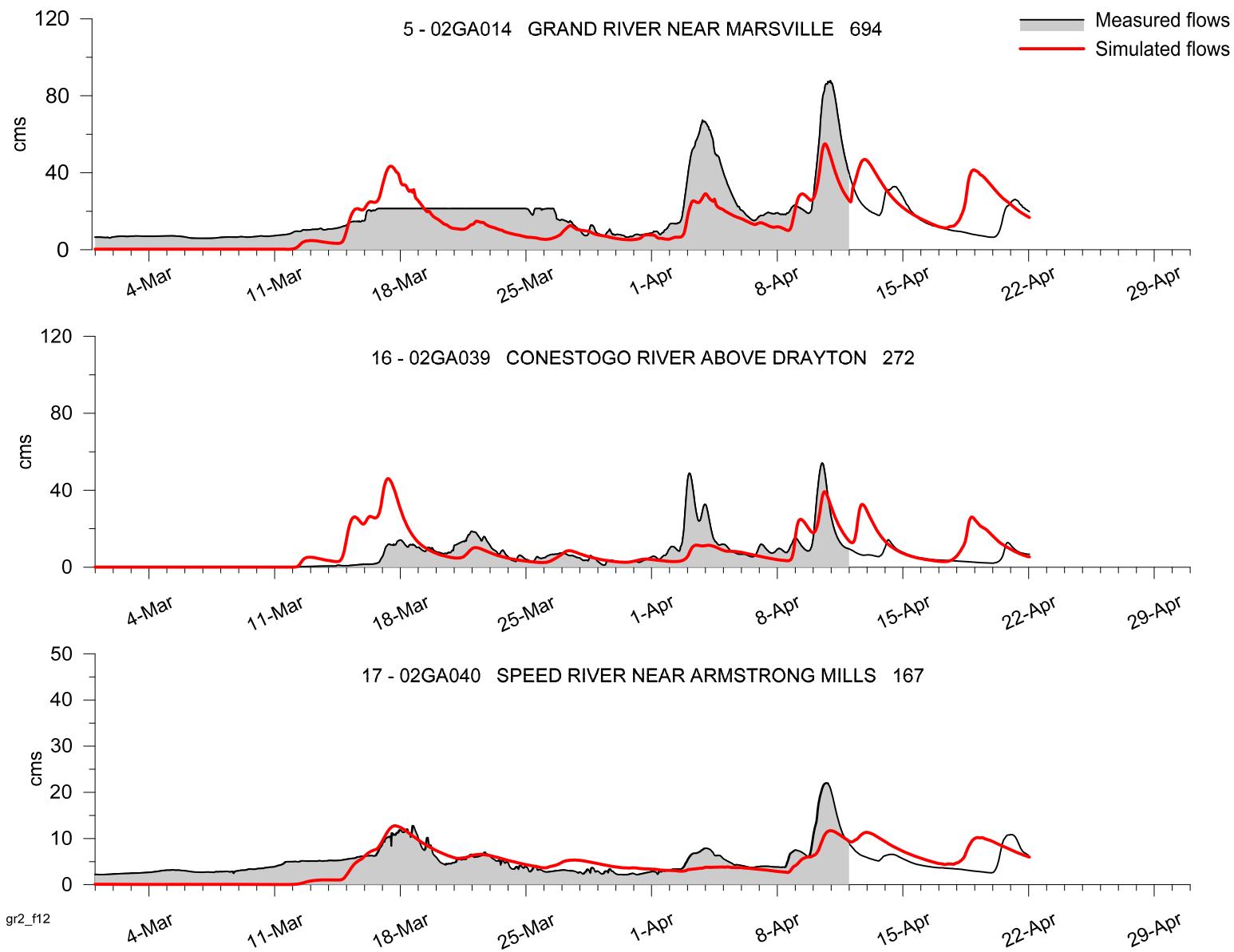
- Three headwaters
- Upper Grand River - Ontario

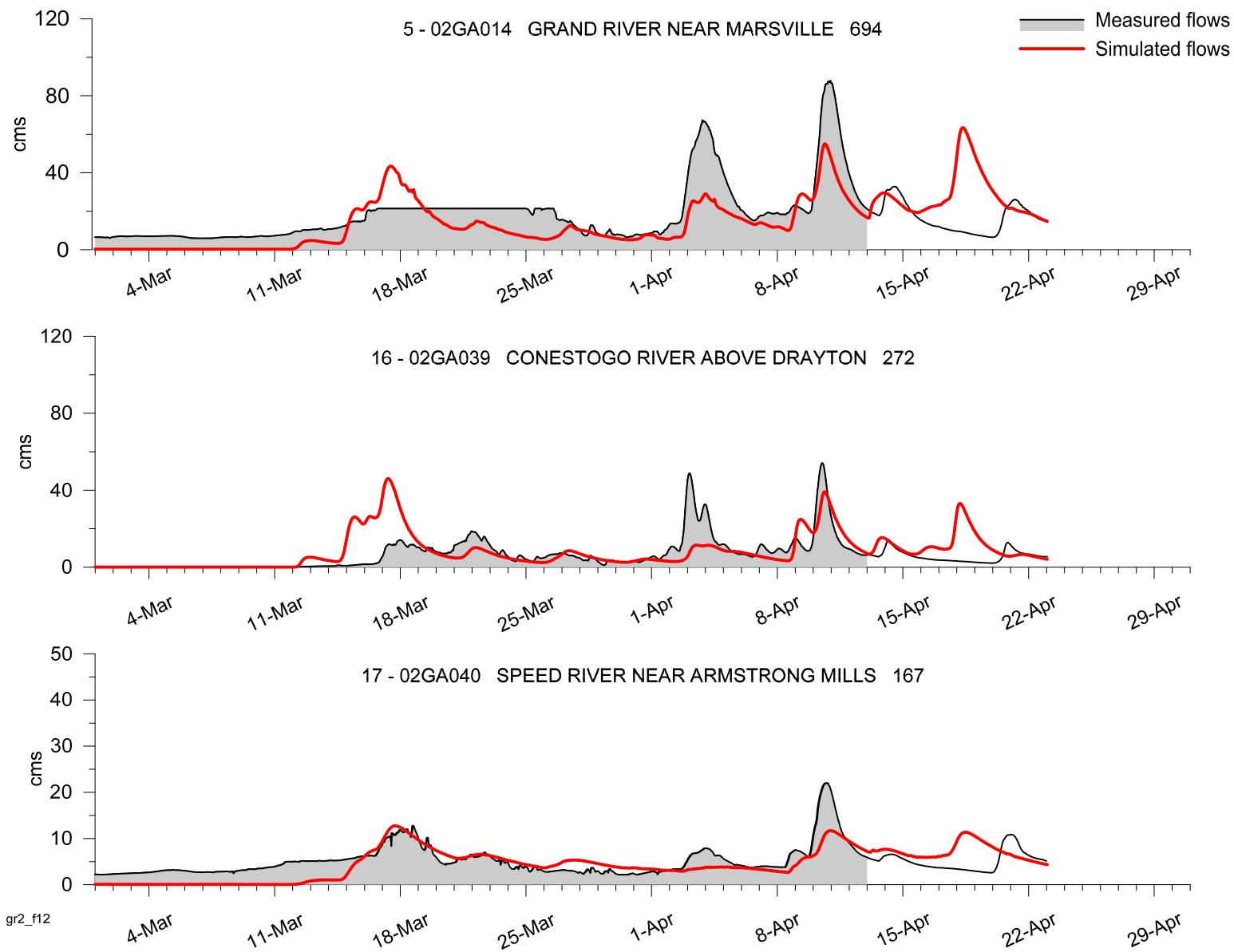


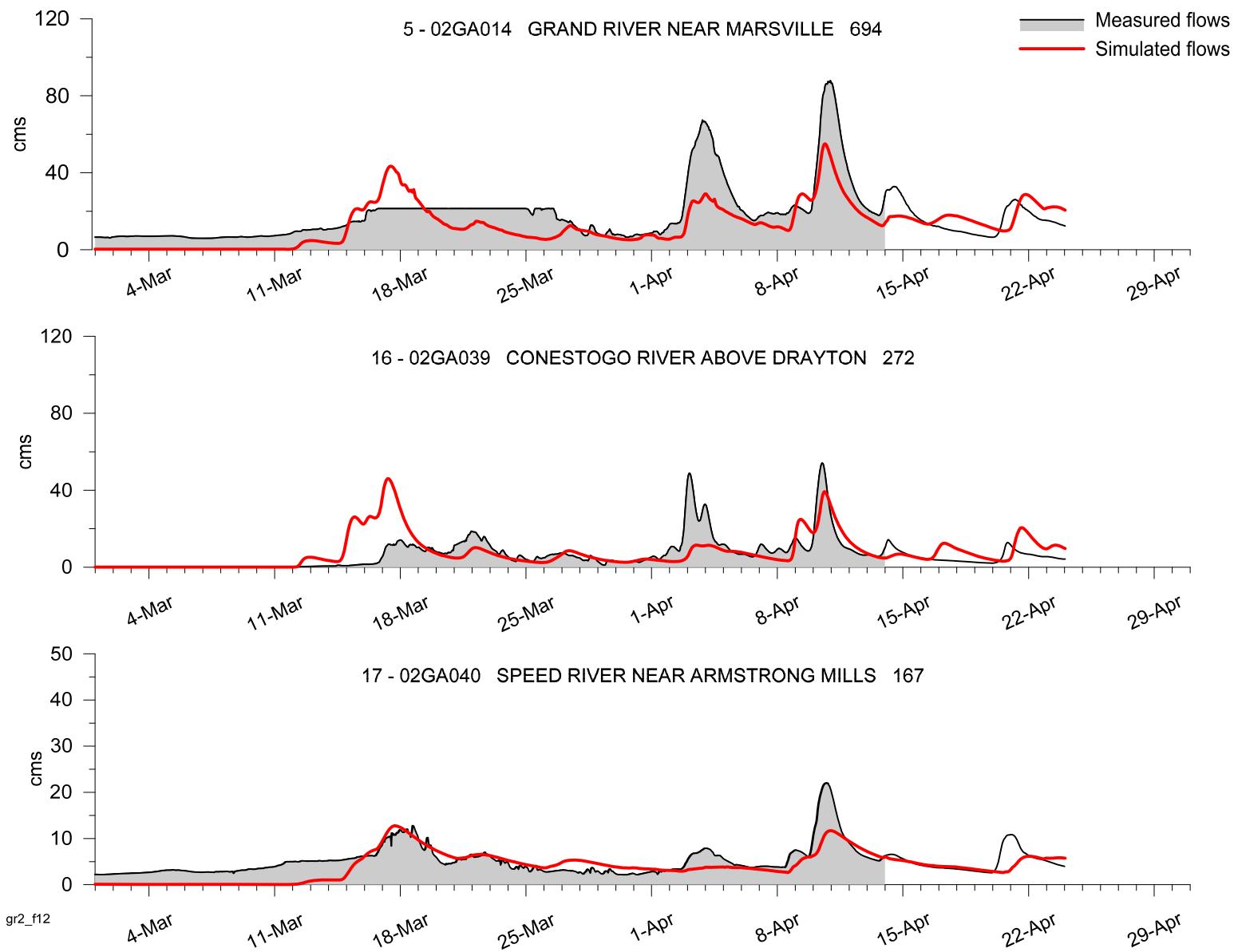


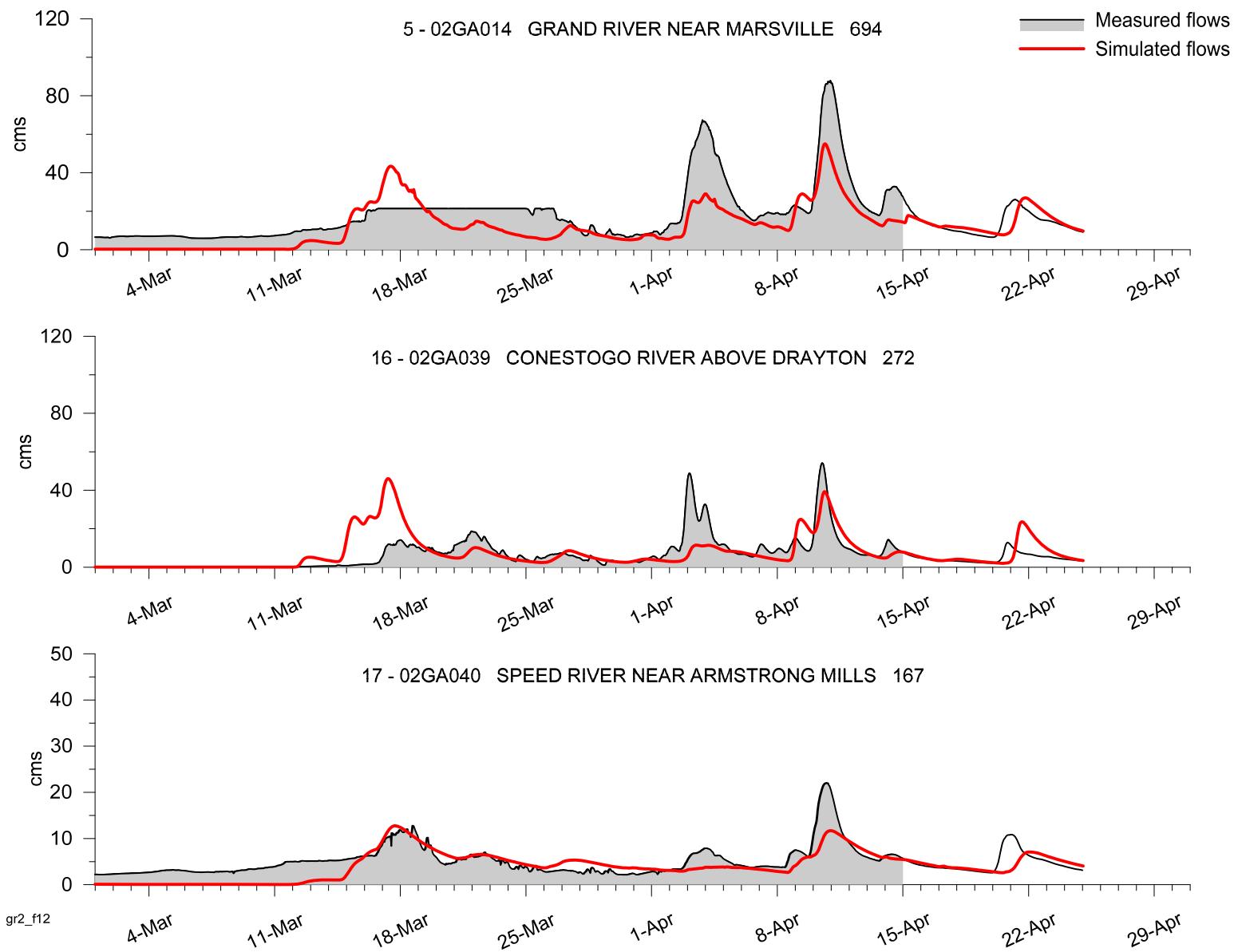












- Three more headwaters
- Lower Grand River tributaries

