



# **Operational Evaluation of VIIRS Satellite Products for River Forecasting**

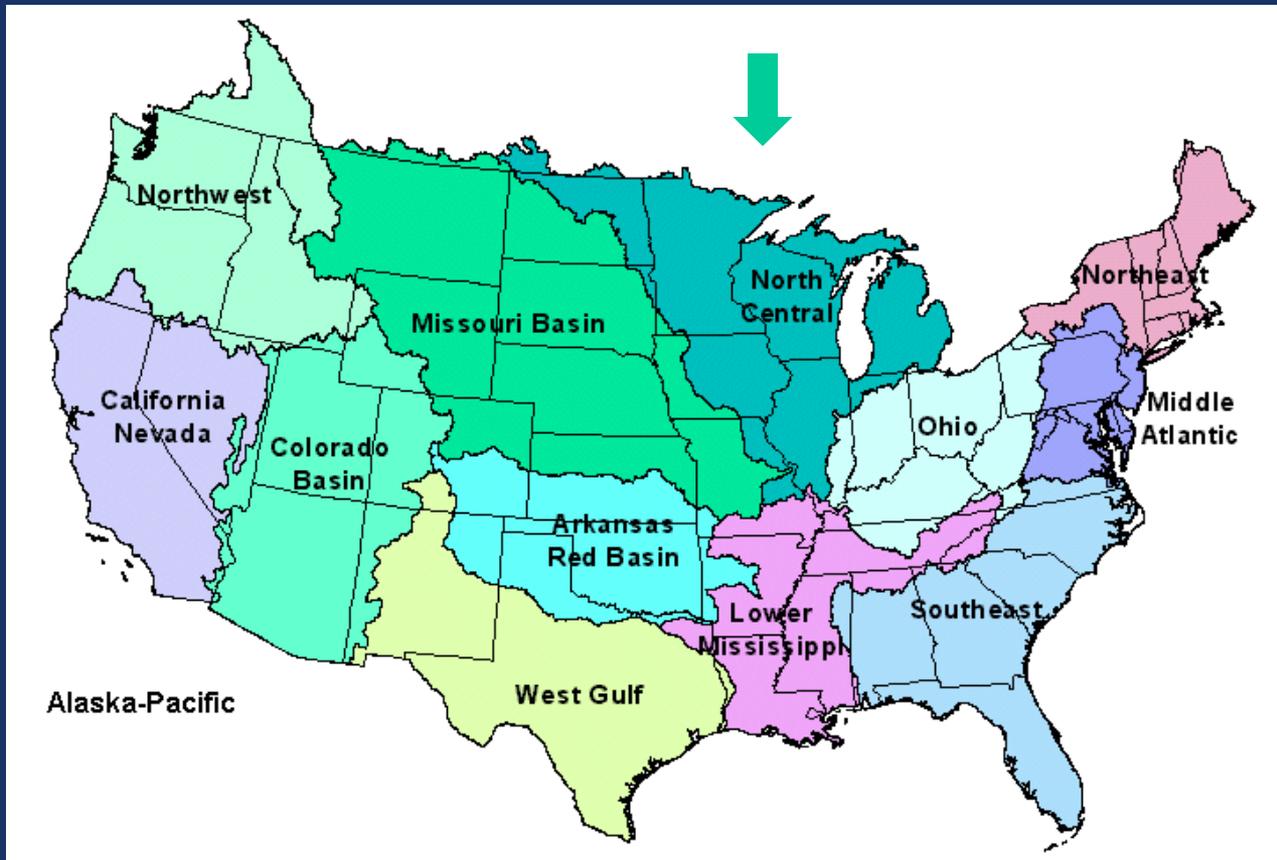
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**North Central River Forecast Center**

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# North Central River Forecast Center





# Operational Test Schedule

- **Began planning in January for operational test at NCRFC and Alaska Pacific River Forecast Center (APRFC).**
- **Goal – to determine value in operational river forecasting process.**
- **2 phase Operational implementation began in March.**
  - ***1<sup>st</sup> phase: establish data ingest in Awips2 from SSEC***
  - ***2<sup>nd</sup> phase: routine evaluation in operational setting***



# VIIRS Products Evaluated

- **River Ice Product**
  - *Developed by City College of New York*
  - *Tested on Mississippi River*
- **River Areal Flood Extent Product**
  - *Developed by George Mason University*
  - *Tested over entire River Forecast Center (RFC) domain*
- **Awips2 data feed via Cooperative Institute for Meteorological Satellite Studies (CIMMS)**



# Operational Evaluation

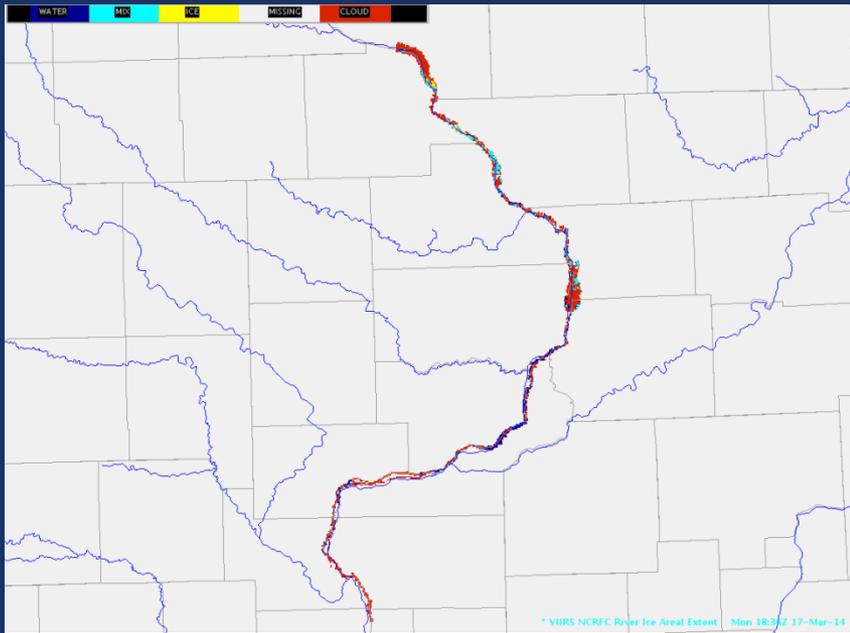


- **Forecast staff reviewed products in Cave D2D perspective**
- **Subjective daily evaluation for accuracy and added value**
- **Primarily used as additional Situational Awareness tool**
- **Information is used to “balance” river forecast model**



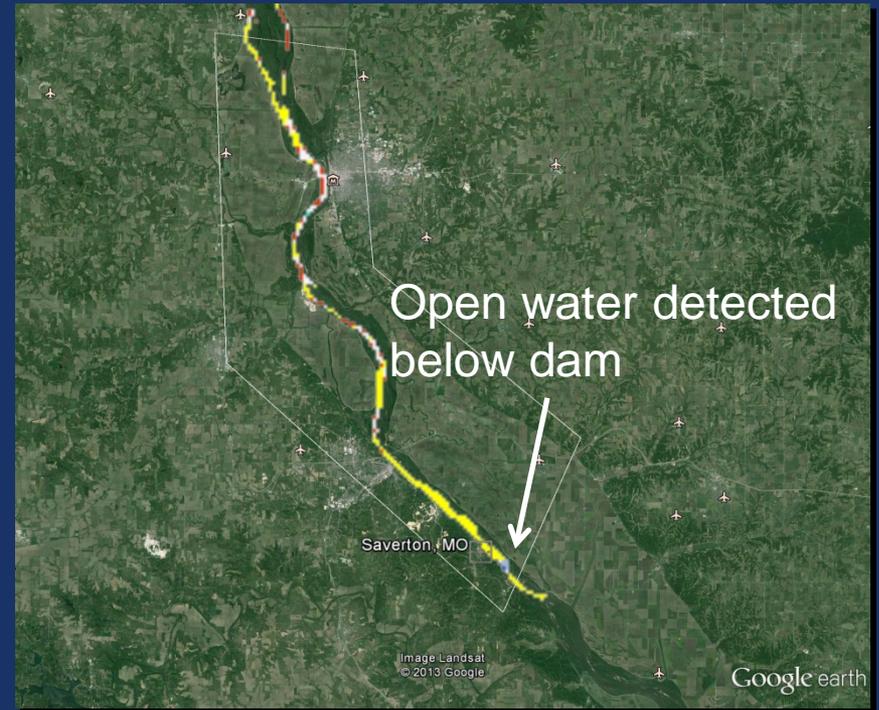
# CCNY River Ice Mississippi River

## East Central Iowa



Awips2 display

## North East Missouri



Google RealEarth display



# River Ice Product



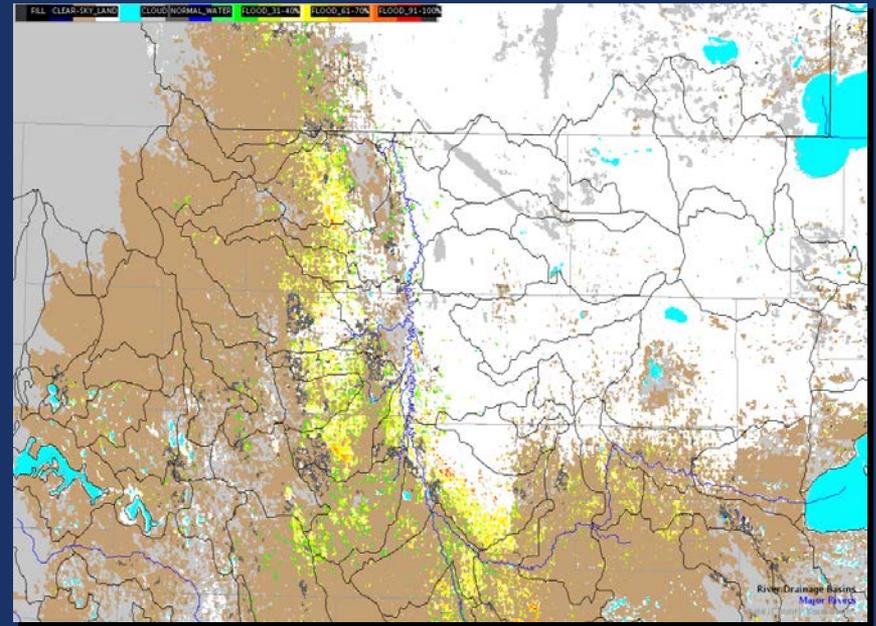
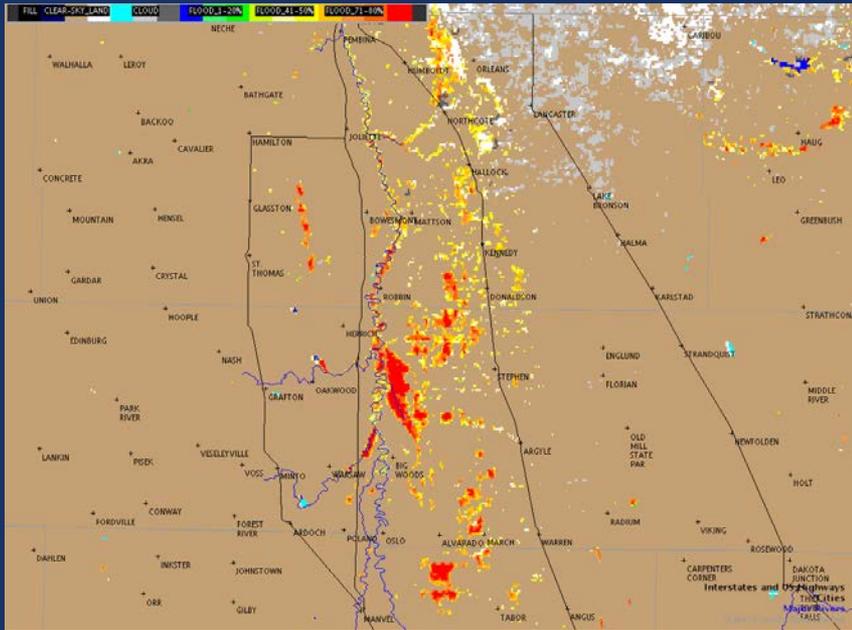
- **Limited to very wide river channels due to 380 meter resolution.**
- **Product is limited by thin cloud cover, no clear sky images were received during test period.**
- **Has not proved effective for operational use at NCRFC thus far.**



# GMU Areal Flood Extent Red River of the North

## Areas of Flood Inundation

## Active Snow Melt Region

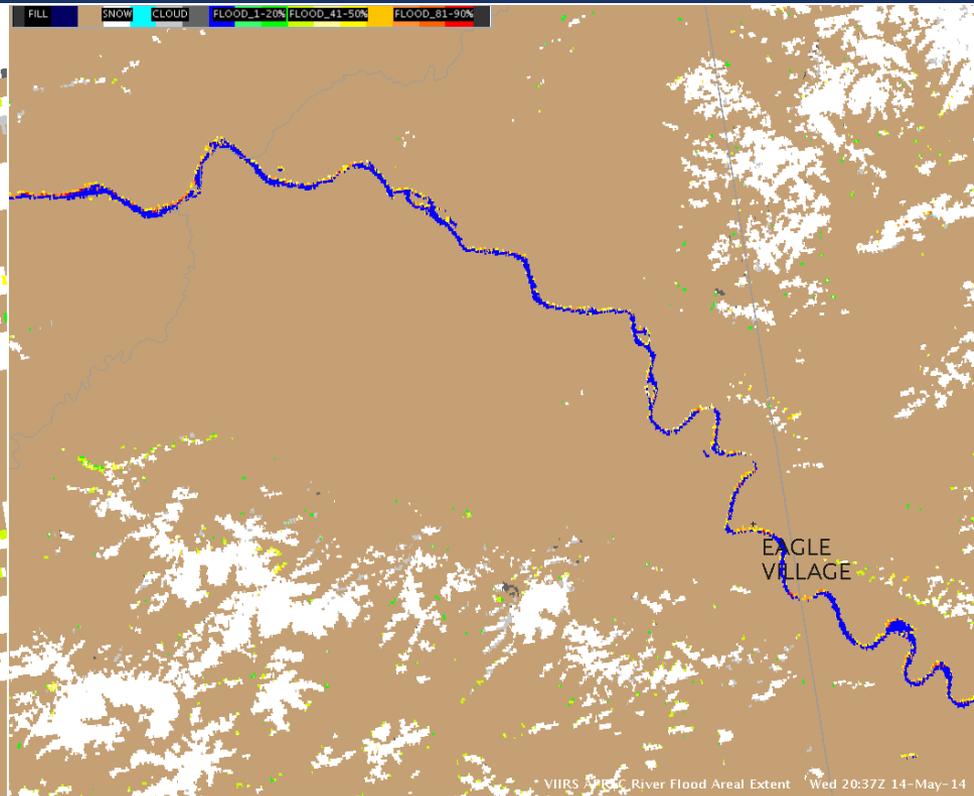
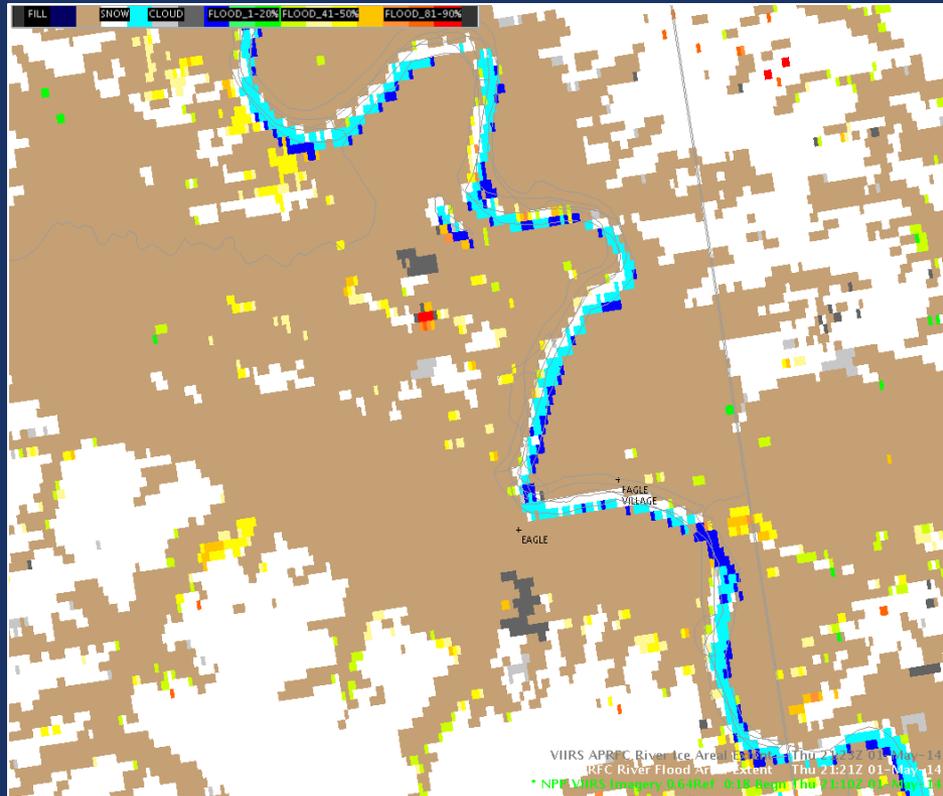




# Areal Flood Extent

## Eagle AK: 05-01 vs 05-14

Ice vs No Ice detection appears excellent





# **Areal Flood Extent Product**

- **Minor flooding in Red River and APRFC limited use for inundation monitoring this year.**
- **Additional benefits quickly recognized in monitoring extent of snow cover and levee breaches.**
- **Proved useful for delineating areas of active snowmelt at multiple basin scales.**
- **Incorrect typing of shallow snow cover as cloud cover did not prove problematic for operational use.**



# **Areal Flood Extent Results**

- **Problems remain classifying some grids with standing water as land.**
- **Alaska RFC identified problems at high latitudes in early morning and evening products.**
- **Both RFCs identified significant value and future potential for river forecasting applications.**



# General Conclusions

- **Color coded products with overlays are easily interpreted by forecasters.**
- **Current beneficial value for situational awareness.**
- **Potential value for future high resolution data use in model algorithms – both snow and hydraulic river models.**
- **Cloud cover and satellite schedule restricts operational availability.**



**Thank You For Your Attention!**

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