CREST-PSD COLLABORATION THEMES

- Drought/low flows (Mike Hobbins/Rob Cifelli Indrani Pal); Demand based Drought index: (Roger Tarendra)
  - Assessing drought economic impacts and ecosystem services
  - Predictability of extreme distributions at S2S time scales
- Snow Processes (Mimi Hughes/Rob Cifelli Taredra) polish the concept using Caribou, ME site
  - Data assimilation – treatment of snow processes in NWM
- Flood forecasting – urban environment (Kelly Mahoney/Mimi Hughes _Jonathan Munoz; Tarendra Lakhankar)
  - Sensitivity of hydrologic forecasts to different forcings
  - High resolution WRF/HRRR modeling in urban environment – hydrologic impact
- River ice
  - Observations of ice buildup – develop capability for predicting river ice in NWM

PRIORITY TOPICS/PROJECTS

1. * FLOOD FORECASTING WATHERSHED SCALE - PR – SENSITIVITY OF FORCINGS TO STREAMFLOW JEAN NERTO SPRING 2019 (PRECIP., SOIL MOISTURE…) Kelly Mahoney/Mimi Hughes _Jonathan Munoz; Tarendra Lakhankar
2. * AQPI-NYC REGIONAL EVALUATION OF HRRR – 3 KM VS 1 KM NEST URBANBUILD ON BOUNDARY LAYER RESEARCH WORKING WITH HRRR TEAM ALSO PRECIP VERIFICATION HOW COULD NWS WFO BE BROUGHT IN AS PART OF THE ANALYSIS? HYDROLOGIC IMPACTS – FLOODED REGIONS, WORK WITH NYC ON REGIONS OF INTEREST/CONCERN FOR FLOODING (KELLY/MIMI TARENDRA/JORGE GONZALEZ)
3. & $ (OWAQ?) SNOW DA – PSD RECLAMATION PROJECT SNOW BASIN OF INTEREST; HYDROMETEOR ID PROJECT – USING TEMP PROFILE FROM HRRR (IN MRMS) PUT INTO NWM. SATELLITE ESTIATES OF SWE (BASED ON CARIBOU, ME SITE) – CONVERT TO RECLAMATION REGIONS OF INTEREST; VALIDATE NWM AT CARIBOU ME SITE. NERTO AT PSD NEXT SUMMER (Mimi Hughes/Rob Cifelli Taredra)
4. * & $ (CPO FFO) METEOROLOGICAL DROUGHT INDICATORS AND IMPACT ON ECOSYSTEM SERVICES - FISH (RUSSIAN RIVER SM DATA SET). CONNECT SM TO STREAMFLOW. NWM MODEL LONG RANGE RUN 30 DAYS – LOW FLOWS. LOOK AT NLDAS EVAP DEMAND IN SNOW MELT BASINS – S2S TIMESCALES. Mike Hobbins/Rob Cifelli/Rich Lataitis/NOAA West Indrani Pal
5. * & $ (CPO FFO) SOCIO-ECONOMIC DEMAND BASED DROUGHT INDEX USING SOIL MOISTURE/NDVI, MODELING FOR CONUS (ROGER PULWARTY/ELIZABETH OSSOWSKI AND TARENDRA/NARESH)
6. & $ (CPO? SURGE?) EDDI, EXTREMES AND AGRICULTURAL SUSTAINABILITY ACROSS FOOD GROWING REGIONS – GLOBAL (ANDY H./MIKE H/ROGER P. INDRANI PAL)
7. & $ (UAS PO?) UAV – SOIL MOISTURE/SNOW BLENDED UAV INSITU SM NETWORKS (NYC, RUSSIAN, BOBOCAMARI, UPPER MI) RADIOMETER MEASUREMENTS (GARY WICK/ALEX VORONOVICH/RICH LATAITIS & RAFAEL RODRIGUEZ)

* SHORT TERM (~1 YR TIMEFRAME FOR MS)

& LONGER TERM (2-3 YR PHD)

$ POTENTIAL PROPOSAL AANNOUNCEMENT FOR LEVERAGING

ACTIONS

- POCS WORK TOGETHER TO FLESH OUT PROJECT TOPICS
- RICH TO PUT ALL PRESENATIONS AND THESE SLIDES ON SHARED GOOGLE DRIVE
- DEVELOP BROWN BAG SESSIONS ALTERNATING PSD-CREST – POCS FOR PROJECT TO WORK THIS OUT (SHAKILA AND RICH)
  - SUGGESTS THURSDAY 10-12 MDT
- IDENTIFY OFFICE FOR CREST VISITORS AT ESRL (RICH LATAITIS)
- DEVELOP RECIPROCAL VISIT TO CREST UNIVERSITIES – EXTENDED VISITS ARE ENCOURAGED
  - INCLUDE DEVELOPMENT OF CAREER SKILLS – MODULE FOR CALSS TEACHING? (ROBIN ON NOAA SIDE AND SHAKILA ON CREST SIDE)
- CAREER COLLOQUIUM (RICH LATAITIS, SHAKILA AND TARENDRA, INDRANI)
  - STUDENTS LEARNING CAREER SKILLS (MATLAB, PYTHON, FORTRAN, R, DATA MANIPULATION, IDL…)
- POST DOC – DEFINE POSITION – DERIVE CONCURRENCE FOR PSD AND CREST (SHAKILA, RHEZA, & ROBIN)
- SHAKILA TO SHARE LINK WITH DETAILS OF POST DOC
  - COST OF LIVING IN BOULDER ISSUES??? WORK OUT SHARING OF COSTS : SALARY-COSTS OF LIVING 6 CONSECUTIVE MONTHS
- COORDINATION OF WEB SITE VISIBILITY AND COMMUNICATION (BARB DELUISI, SHAKILA MERCHANT)
  - LETTER DEWSCRIBING THIS MEETING – INCLUDE AGENDA ?
  - OCT 20 MEETING CSCCWG – ROBIN ATTEND?

FLOOD FORECASTING – URBAN ENVIRONMENT

- CREST activities in this area:
  - WRF-Hydro to be setup in selected watersheds across Puerto Rico + new obs to be added
  - Hi-res WRF in NYC + hydromet obs across City
  - Remote sensing observations of soil moisture
  - UAV for soil moisture monitoring
  - X-band radars applications in PR
- Intersection with PSD research theme: "Advance the use of hydrometeorology observations and modeling in watersheds to improve scientific information for managing water resources"
- Explore impact of land use changes and forcings on streamflow response
- Explore sensitivity of runoff to hi res QPF
- Additional motivation
  - NWC will launch Puerto Rico domain in Q2 of FY20 – assessment of forcings and model performance is needed to understand biases…
- How can watershed forecasting inform NWC operational implementation?
- Calibrate WRF-Hydro…
- Impacts of land cover differences
- Examine forcing impact on streamflow response
  - Precipi forcing

SNOW PROCESSES

- CREST has detailed snow information from Caribou ME site, snow product to derive SWE
- PSD has a project that intends to look at snow processes in the NWM
- Intersection with PSD research theme: “improve understanding of the physical processes underlying subseasonal-to-seasonal variability and extremes to improve predictive skill and forecast reliability”
- Additional motivation: Office of Water Prediction considers coupled DA (starting with snow) as high research priority

DROUGHT

- CREST NERTO project to assess the propagation of meteorological drought (low flows) on fish productivity in collaboration with NOAA SWFSC
- Cassandra drought index – demand based – SM/NDVI (NESDIS STAR-SMAP/SMOS--.>SMPOS), modeling
- PSD done some exploratory work on economic benefits of ecosystem services - AQPI
- Explore early warning impacts over different time scales non substitutibility of ecosystem services
- What are environmental conditions leading to predictability of events at S2S time scales?
- Intersection with PSD research themes: "Improve understanding of the physical processes underlying subseasonal-to-seasonal variability and extremes to improve predictive skill and forecast reliability" and "Improve physical understanding of the causes of regional weather, water and climate extremes, their impacts, and evaluating model forecast performance"
- Possible connection with NOAA west regional societal-impacts/social-science/economic-impacts issues

RIVER ICE

- Observations of frozen rivers
- Provide information to US ACE for navigation purposes
- Linkages with Great Lakes implementation of National Water Model / Alaska?