REAL-TIME EVALUATION OF HYDROLOGIC PERFORMANCE MEASURES SPECIFIC TO CENTRAL EVERGLADES PLANNING PROJECT (CEPP) RESTORATION SUCCESS

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Outline

• Role of EDEN
• Real-time Restoration Evaluation
• Examples:
  • ERTP affects on tree island water level
  • Hydroperiods in CSSS subpopulation areas
  • Water level gradient vector maps
  • Tribute to Florence Nightingale
    • Flow direction rose direction diagrams
EDEN

- Initial role
  - Provide QA/QC hydrology for PIs
- Role has broaden
  - Provide hydrologic analysis and application

- Real-time evaluation tool for CEPP
  - Build on existing analysis and application
  - Develop new approaches and tools
Everglades Restoration Transition Plan (ERTP)

• Issue: The water-control plans for the Everglades caused unnatural inundation of sacred burial sites on Tree Islands
Tool: Online application for real-time evaluation
sue: Limited success in increasing populations of the CSSS. Need to evaluate water depth during nesting season.
Tool: An animated viewer shows water depths and statistics of percentages of flooded areas.
Flow Direction Vectors

• Issue: Restore North-South orientation of flow directions
• Need: After modification to canal system, detect changes in flow directions
• Use EDEN surface to compute water level gradient vectors
Water Level Vector Gradient Map
Water Level Vector Gradient Map

Vector Map
water level color ramp

Vector Map

Slope

195.3 200.9 207.0 209.9
195.5 204.3 212.1 214.0
200.0 211.7 218.8 218.2
207.5 217.4 223.4 222.8

Vector Map
Florence Nightingale’s Approach

Diagram of the Causes of Mortality in the Army in the East.

The areas of the blue, red, & black wedges are each measured from the centre as the common vertex. The blue wedges measured from the centre of the circle represent area, the deaths from Preventible or Mitigable Zymotic diseases; the red wedges measured from the centre the deaths from wounds; & the black wedges measured from the centre the deaths from all other causes. The black line across the red triangle in Nov. 1854 marks the boundary of the deaths from all other causes during the month. In October 1854, & April 1855, the black area coincides with the red; in January & February 1855, the blue coincides with the black. The entire areas may be compared by following the blue, the red, & the black lines enclosing them.
Detecting Changes in Flow Direction

- Generate time series of water-level gradient vectors
- Generate rose diagrams to compare “pre-” and “post-” restoration flow directions
Florence would be proud
Florence would be proud

Warning:
Summary

- Previous EDEN application can be used for real-time evaluation of CEPP implementation
- EDEN and others (JEM lab, NPS) have the frameworks to leverage resources for real-time evaluation
Combination of measured data, restoration simulation, and envelope