Research request: Quantify the water delivery ecosystem service delivered by CapeNature

Background

CapeNature manages a number of catchment areas that provide the valuable ecosystem service of clean water delivery. Managing these catchments is costly and requires considerable human and financial resources. The draft water pricing strategy makes provision for maintenance of ecological infrastructure to ensure sustainable water yield from the catchments. CapeNature would like to know what the extent of their contribution is to the delivery of this ecosystem service.

CapeNature hereby requests that research be undertaken to formally estimate the amount of clean water flowing from CapeNature managed areas through developing appropriate energy balance and/or hydrological models. Evaluation of competing models should be undertaken in a multimodel inference framework (e.g. Burnham & Anderson 2004, Poeter et al. 2005).

Research questions

How much water do CapeNature managed catchments yield?

There are various ancillary questions to this which may also be subject to estimation based on these models such as how much less water would be available if these catchments were invaded by alien plant species. This is also a research requirement that has been identified by the CSIR and they would be a valuable partner in tackling this work.

Another logical follow on from this research would be a quantification of the water quality derived from CapeNature managed catchments.

Equipment and support

The following equipment and services will be supplied by CapeNature:

Access to CapeNature reserves. Collaboration from Regional Ecologists and Ecological Coordinators. Access to relevant data curated by CapeNature.

Funding

No specific CapeNature funding for this project is available at present but water is a nationally important strategic resource and there may be opportunities to fund this work from institutes such as the Water Research Commission.

Sample sites

Ground-truthing and/or empirical calibration of models should cover a full range of bioregions, topographies and climates to be useful across the Western Cape Province.

Time lines

There is no set time line for the completion of this product other than that it has been identified as a high priority for the next five years. The duration of the research is expected to be in the region of one year.

References

Burnham, K.P. & Anderson D.R. 2004. Multimodel inference: understanding AIC and BIC in model selection. Sociology Methods Research 33:261–304.

Poeter E. & Anderson, D. 2005. Multimodel ranking and inference in ground water modeling. Ground Water 43: 597–605.

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