STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., GOVERNOR

CALIFORNIA COASTAL COMMISSION
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August 6, 2018

USC Sea Grant
3454 Trousdale Pkwy, CAS 200
Los Angeles, CA 90089-0373

SUBJECT: CA Ocean Protection Council Proposition 84 Competitive Grant Program
Support for Young et al., California Coastal Cliff Erosion and Retreat

To Whom It May Concern:

We are writing in support of Dr. Adam Young's proposal to the CA Ocean Protection Council Proposition 84 Competitive Grant Program entitled *Statewide assessment of California coastal cliff erosion and retreat.* This proposal is seeking three years of funding to examine seacliff erosion rates and retreat mechanisms using recently acquired coastal LIDAR data from 1998, 2009, and 2016. This study will provide a comprehensive analysis of seacliff changes throughout the state. The last study of this type was conducted by Dr. Young, and compared cliff positions from 1998 and 2009 LIDAR. This study benefited the California Coastal Commission staff and the results are currently used as a tool for evaluating erosion hazards and informing staff's coastal permit recommendations.

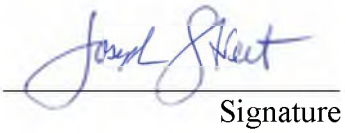
Dr. Young proposes to compare technologically similar data sets to provide detailed information on current cliff erosion trends. The 1998, 2009, and 2016 LIDAR data sets were acquired at significant expense to both the state and federal government with the expectation that they would be used for the type of study that Dr. Young has proposed. The proposed work will update southern and central California cliff erosion rates (now a decade old) and provide the first detailed rates for much of northern California. Dr. Young proposes to present the results to the California Coastal Commission staff and Coastal Sediment Management Workgroup, in addition to making the results available online at the Scripps Center for Climate Change Impacts and Adaptation website in a user-friendly format, such as Google Earth klm, for coastal managers and the public.

The California Coastal Commission is the principal regulatory agency for coastal zone management on the open coast of California. One of the more difficult issues facing the Commission is the presence of coastal development – and the siting of new development – on eroding seacliffs. This issue will become more complex with rising sea level and the potential for greater retreat due to increased exposure of the cliff to wave attack. Commission decisions depend on a sound factual basis and understanding of coastal processes. Dr. Young's study will assist the Commission by providing needed information on recent cliff changes and analysis of the underlying coastal processes and mechanisms for cliff retreat.

In the next few years, many coastal communities will be developing or updating their Local Coastal Programs (LCPs). The seacliff change data that will result from Dr. Young's study will be a valuable source of local information to inform new LCP policies addressing coastal hazards. In addition, the LIDAR data sets and analysis will provide useful baseline information for many communities, enabling them to have an established metric from which to evaluate future change. In addition, because many coastal communities lack the resources and technical expertise to work with the LIDAR datasets directly, Dr. Young's proposal to make the seacliff change data available via a web-based tool will be a valuable resource to these communities.

Dr. Young's project will provide new and useful information for use by the Coastal Commission and many coastal communities. It is a much needed application of existing data, with the added benefit of analysis and linkages to coastal processes. The overall objectives of the proposal are in keeping with the Ocean Protection Council purpose and will advance the state's program. We urge you to support this project as OPC funded research.

Sincerely,


Signature

Joseph Street
Staff Geologist

Lesley Ewing
Senior Coastal Engineer

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION
Lisa Ann L. Mangat, *Director*
San Diego Coast District
4477 Pacific Highway
San Diego, CA 92110

July 31, 2018

CA Ocean Protection Council Proposition 84 Competitive Grant Program
Administered by:
USC Sea Grant
3454 Trousdale Pkwy, CAS 200
Los Angeles, CA 90089-0373

RE: California State Parks Support for Statewide Assessment of Coastal Cliff Erosion Rates Project

Dear Grants Analyst,

California State Parks (CSP) wishes to support funding the proposal from Dr. Adam Young of Scripps Institution of Oceanography to conduct an updated statewide assessment of California coastal cliff erosion rates. We address a large number of erosion issues along our coastline. These problems will increase as sea levels continue to rise and we need better and up to date information on coastal erosion rates and processes. Dr. Young's proposal will provide this needed information, such as mapping recent erosion hot-spots, and up to date erosion rates needed for proper planning.

In addition to mapping erosion with modern high resolution data, Dr. Young proposes to validate a cliff hazard index. If validated, the index could greatly improve planning by helping to direct our resources appropriately. In addition, the hazard index will help identify areas prone to failure and increase beach safety. The project will provide essential insight into coastal processes and erosion, and therefore important implications for CSP management strategies.

Dr. Young proposes to make the results available online to managers and the public in both a user-friendly format and a more detailed GIS files for advanced GIS users. This is excellent, because these data are often not readily available nor current. These mapped results provide a very useful tool and will help managers visualize the issues at hand. As an added benefit, Dr. Young plans to present the results and the online tool to stakeholders like CSP.

In summary, I strongly support Dr. Young's proposal. The results will provide essential insight into coastal erosion processes necessary for proper future coastal management in California. This study will no doubt benefit CSP and Beaches throughout the state.

If you have any further questions please contact my Natural Resources Program Manager Darren Smith at darren.smith@parks.ca.gov or (619) 952-3895.

Sincerely,

Robin Greene, San Diego Coast District Superintendent

Cc. Lisa Urbach, North Sector Superintendent
Darren Smith Natural Resources Program Manager
Reading File

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August 6, 2018

Ocean Protection Council Proposition 84 Competitive Grant Program
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USC Sea Grant
3454 Trousdale Pkwy, CAS 200
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To Whom It May Concern:

On behalf of the City of Solana Beach, we support funding the subject proposal from Dr. Adam Young of Scripps Institution of Oceanography to conduct an updated statewide assessment of California coastal cliff erosion rates. This study is of interest locally and regionally and has vital importance to San Diego's coastal resources, extensive coastal development and infrastructure, and recreational opportunities offered along our coast. This study has direct implications locally and for our region and future coastal management strategies.

In addition to mapping erosion with modern high resolution data, Dr. Young proposes to validate a cliff hazard index. If validated, the index could greatly improve planning by helping to direct resources appropriately. In addition, the hazard index will help identify areas prone to failure and increase beach safety (five people have been killed in San Diego County from coastal bluff failures). The project will provide essential insight into coastal processes and erosion, and therefore may be useful in informing coastal management strategies including both short term and long term adaptation strategies.

Dr. Young proposes to make the results available online to planners, resource managers and the public in a user-friendly format and as GIS files. This will be beneficial as these data are often proprietary and not readily available or contemporary. The results may provide to be an important tool for understanding critical erosion areas. As an added benefit, Dr. Young plans to present the results and the online tool to stakeholders like the City of Solana Beach.

In summary, Solana Beach strongly supports Dr. Young's proposal. The results are anticipated to provide important insight into coastal erosion processes necessary for informing future coastal management strategies/options in the San Diego region.

Sincerely,

Gregory Wade
City Manager

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*

DEPARTMENT OF PARKS AND RECREATION
Lisa Mangat, *Director*
Division of Boating and Waterways
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6 August 2018

CA Ocean Protection Council
Proposition 84 Competitive Grant Program

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USC Sea Grant
3454 Trousdale Pkwy, CAS 200
Los Angeles, CA 90089-0373

Subject: STATEWIDE ASSESSMENT OF CALIFORNIA
COASTAL CLIFF EROSION AND RETREAT

To Whom It May Concern:

I strongly support the subject proposal from Dr. Adam Young of Scripps Institution of Oceanography. This study is of great interest to me as a researcher and manager of the Parks/DBW Oceanography Program. It has vital importance to California's coastal resources, extensive coastal development and infrastructure, and vast recreational opportunities. Further, I expect to contribute and collaborate in the effort at no cost to the Ocean Protection Council.

The California coast is a state treasure critically threatened by ongoing erosion that will only worsen as mean sea level rise (MSLR) accelerates. Quantifying past erosion rates and processes are necessary to improve and calibrate models projecting future erosion. For example, the 20-year hiatus in MSLR from about 1980-2000 allowed Dr. Young to isolate and quantify the role of rainfall in cliff erosion. Dr. Young is a world leader in obtaining and analyzing cliff retreat remote sensing LiDAR data, and modeling cliff processes. The knowledge to be gained by the proposed investigation is similarly crucial to further understanding the complex California coastal system, a key to future planning and adaptation.

The work proposes to systematically analyze existing high-resolution LiDAR data and provide maps of past cliff erosion along the California coast. Cliff erosion is a widespread problem and the proposed study will provide essential information for coastal planners and engineers not available by any other means than remote sensing. The scope, use of new high-resolution datasets, and proven approach make this a critical, timely, and important project.

As Staff Oceanographer in the California State Parks Division of Boating and Waterways (Parks/DBW) and a Research Associate at Scripps, I fund and conduct research in the areas of waves, sea level, and coastal erosion, including some of Dr. Young's work. Parks/DBW is responsible for funding recreational boating infrastructure, safety and access programs, and beach restoration and erosion control in California. Parks/DBW has many millions of dollars

invested in boating facilities and shoreline protection structures, as well as ongoing sand replenishment and beach restoration projects. Parks manages numerous state beaches and parks and this work is vital for planning and management. Parks plans to provide cooperative funding for this work. Dr. Young will work with, and present the results to stakeholders, including local state parks managers. Parks staff and I will assist with this process.

I have worked closely with Dr. Young for about 10 years. I expect to continue collaborating with him, enhancing the proposed work, and providing for its communication and application. If you have any questions or would like to discuss my recommendation or participation, please contact me at 858-534-3234, or by e-mail at reinhard.flick@parks.ca.gov.

Respectfully yours,

Reinhard E. Flick, Ph.D.
Oceanographer