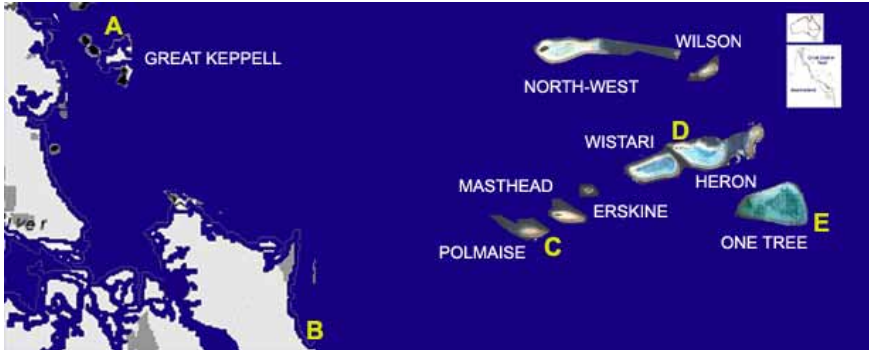


Heron Island Research Station, Centre of Marine Studies, University of Queensland, Australia

Institutional setting	
1. Name and affiliation	Heron Island Research Station, Centre of Marine Studies University of Queensland, Australia
2. Contact details	<p>Address: Centre for Marine Studies The University of Queensland QLD 4072 Australia Ph: 07 3346 9418 Fax: 07 3365 4755</p> <p>Website: Heron Island Research Station: http://www.marine.uq.edu.au/hirs/ Centre for Marine Studies: http://www.marine.uq.edu.au</p> <p>Principal contacts: COE Rep: Professor Ove Hoegh-Guldberg, email: oveh@uq.edu.au Business Manager CMS, Kate Nuttall, email: K.Nuttall@marine.uq.edu.au Prof. D. Siddle, Deputy Vice-Chancellor (Research) Email: d.siddle@research.uq.edu.au</p>
3. Mandate and background	<p>The Centre for Marine Studies represents a world leading capacity for coral reef research and teaching and has a strong curriculum to support the development of Centers of Excellence in other global regions.</p> <p>The Centre for Marine Studies maintains a research program that spans many fields of marine and coastal science. As a strategic centre within the University of Queensland, the Centre for Marine Studies represents the focal point for the combined effort in marine sciences across the University, and it is mandated to assist integration, collaboration, and development of research and educational programs related to, or involving, marine science.</p> <p>Accessible through the Centre are the diverse marine systems of Queensland, which include pristine coral reefs, rugged rocky shores and clean beaches, salt-marshes, mangroves and seagrasses. Teaching and research programs cover the full range of organisms and environments.</p> <p>The Centre integrates marine teaching and research for the disciplines of Anatomical Sciences, Anthropology, Agriculture, Botany, Chemical Engineering, Chemistry, Civil Engineering, Earth Sciences, Economics, Geographical Sciences and Planning, Law, Microbiology and Parasitology, Management Studies, Physics, Tourism and Zoology and Entomology.</p> <p>Centre for Marine Studies has formed five research groups to focus more closely on the different areas within marine studies</p> <ul style="list-style-type: none"> • Marine Biology and Biodiscovery • Climate Change and Coastal Ecosystems • Coastal Zone Management • Aquaculture, Fisheries and Parasitology • Marine Botany and Coastal Plant Communities

<p>4. Research stations</p>	<p>Centre for Marine studies operates one of the largest platforms of coral reef research in the world. In addition to its base of operations in St Lucia, the Centre operates three of the most important research stations on the Great Barrier Reef (Heron Island Research Station, Moreton Bay Research Station and Low Isles Research Station), stretching the entire length of the Great Barrier Reef and represent some of the best equipped platforms for research and research training on coral reef sciences in the world.</p> <p>The Heron Island Research Station (HIRS) was established in the 1950s and is operated by the Centre for Marine Studies. It has developed into Australia's largest, best-equipped and most productive university-owned marine research station and is an international facility for coral reef research and student training in marine sciences. In 2002, it hosted over 2000 researchers and students, with researchers and education groups from twenty nations using the station. Station users came from Brazil, Canada, Denmark, England, Finland, France, Germany, Ireland, Italy, Mexico, New Zealand, Norway, Portugal, Spain, Sweden, the People's Republic of China, Russia, Scotland, the United States of America. In 2002 it hosted the second major GEF TR collaborative workshop and planning meeting.</p>
<p>5. Location</p>	<p>Heron Island, Latitude: 23°27'0"S; Longitude: 151°55'0"E</p>
<p>6. Local area map</p>	<p>Heron Island is located in the Capricorn Bunker group, Southern Great Barrier Reef</p> 
<p>7. Institutional setting</p>	<p>CMS is part of the Faculty of Biological and Chemical Science. As a strategic centre within the University of Queensland, the Centre for Marine Studies represents the focal point for the combined effort in marine sciences across the University.</p>
<p>8. Management structure</p>	<p>The Director of Heron Island Research Station and the Centre for Marine Studies (Ove Hoegh-Guldberg) reports directly to the Executive Dean (Professor Michael E McManus) who in turn reports to the Deputy Vice Chancellor, Professor Paul Greenfield. The COE Rep reports to the Business Manager of Centre of Marine Studies on project progress and budgetary issues.</p> <p>Center of Marine Studies, management structure – see <i>diagram attached</i></p>

Research	
9. Research areas	<p>Main CMS research programs</p> <p>Marine Biology and Biodiscovery The University of Queensland has one of the strongest records in Australia in marine biology. The University also has a major commitment to biotechnology across the campus and an excellent record of achievements of the commercialisation of marine biotechnology. This research group includes research on marine biology, marine ecology, marine physiology, marine microbiology, marine biotechnology and biological oceanography.</p> <p>Climate Change and Coastal Ecosystems This group is focused on understanding change being brought about by climate change on our coastal and marine communities. Given the massive scales at which these factors are exerting an effect, a large component of this program is focused on the remote sensing of biological communities and the change that is occurring within them. Some areas of research within this group are remote sensing, global climate change and marine conservation.</p> <p>Coastal Zone Management The University of Queensland has expertise that spans the geological, geographical, biological, chemical and physical areas of oceanography. The Coastal Zone Management group includes researchers working with coastal management, wastewater management, toxicology, physical oceanography, paleoceanographic studies and global climate change.</p> <p>Aquaculture, Fisheries and Parasitology Aquaculture is one of the fastest growing industries in Australia and in the South East Asian and Pacific regions. SE Queensland is poised to play a key role with the extensive aquaculture facilities at CSIRO (Cleveland and Long Pocket) and DPI (Bribie Island). The Aquaculture group has expertise in marine aquaculture, marine parasitology and techniques in marine and freshwater aquaculture.</p> <p>Marine Botany and Coastal Plant Communities The Marine Botany and Coastal Plant Communities group have ongoing projects including studies on the ecophysiology of seagrasses, the development of marine plants as indicators of water quality, the influence of nutrient enrichment on seagrasses, the roles of nitrogen fixation and sulfate reduction in seagrass growth, carbohydrate and fluorescent responses of seagrasses to changes in light and nutrient regimes and the effects of nutrient enrichment on tropical marine systems. The results of these projects are presented annually at national and international symposia and conferences. It is a vibrant section of the Centre for Marine Studies which draws together expertise that spans the important link between land and sea. They have an extensive and informative website.</p>

<p>10. Faculty staff</p>	<p>Senior Academic staff Professor Ove Hoegh-Guldberg Professor Terry Done (Adjunct) Professor Charlie Veron (Adjunct) Associate Prof. Ron Johnstone Associate Prof. Norman Duke Dr Sophie Dove (senior lecturer) bleaching Dr Ross Jones (lecturer)</p> <p>Post-doctoral associates Dr Maoz Fine Dr Tyrone Ridgway Dr Selina Ward Dr Bill Leggat microarray Dr Christine Schönberg</p> <p>Dr Dan Franklin</p> <p>Academic Staff John Lucas Shaun Collin Andy Barnes Simon Davy John Healy Judy O'Neil</p>	<p>Field of expertise Coral bleaching & climate change Ecology of bleaching Biodiversity and climate change CZM and climate studies. Mangrove Systems & climate change Molecular studies of coral bleaching Physiology of zooxanthellae stress</p> <p>Physiology of coral bleaching Genetics and reef connectivity Stress and coral reproduction Coral/zooxanthellae stress</p> <p>Reef bioerosion and climate studies</p> <p>Cell Biology of bleaching</p> <p>William Loh Brett Edgerton James Udy Mike Pole Eric Peterson Darryl Whitehead</p>
<p>11. Heron Island Research Station Staff</p>	<p>Professor Ove Hoegh-Guldberg Ted Upton Paul Hallam Jim Lawrence Dave Logan Collette Bagnato Peter Drew Russell Graham Mike Phillips Jennifer Reiffel Maureen Roberts Richard Simpson</p>	<p>Station Director Station Manager Maintenance Manager Boating and Diving Manager Laboratory Services Manager Station Assis. - Laboratory Services Maintenance Assistant Housekeeper/Cleaner Station Assistant - Boating and Diving Housekeeper/Cleaner Secretary/Receptionist Groundsperson</p>
<p>12. Ongoing research programmes</p>	<p>Ongoing research projects</p> <ul style="list-style-type: none"> • Biology of red tide/harmful phytoplankton (R. Azanza) • Plankton ecology • Coral Reef, Seagrass and Mangrove Ecosystems • Invertebrate biology and mariculture • Seaweed biology, molecular genetics, taxonomy, and culture • Nearshore and offshore oceanographic processes • Biochemical studies of marine organisms • Natural products in seaweeds and invertebrates • Selective breeding of aquacultured and maricultured species • Population genetics of marine organisms 	

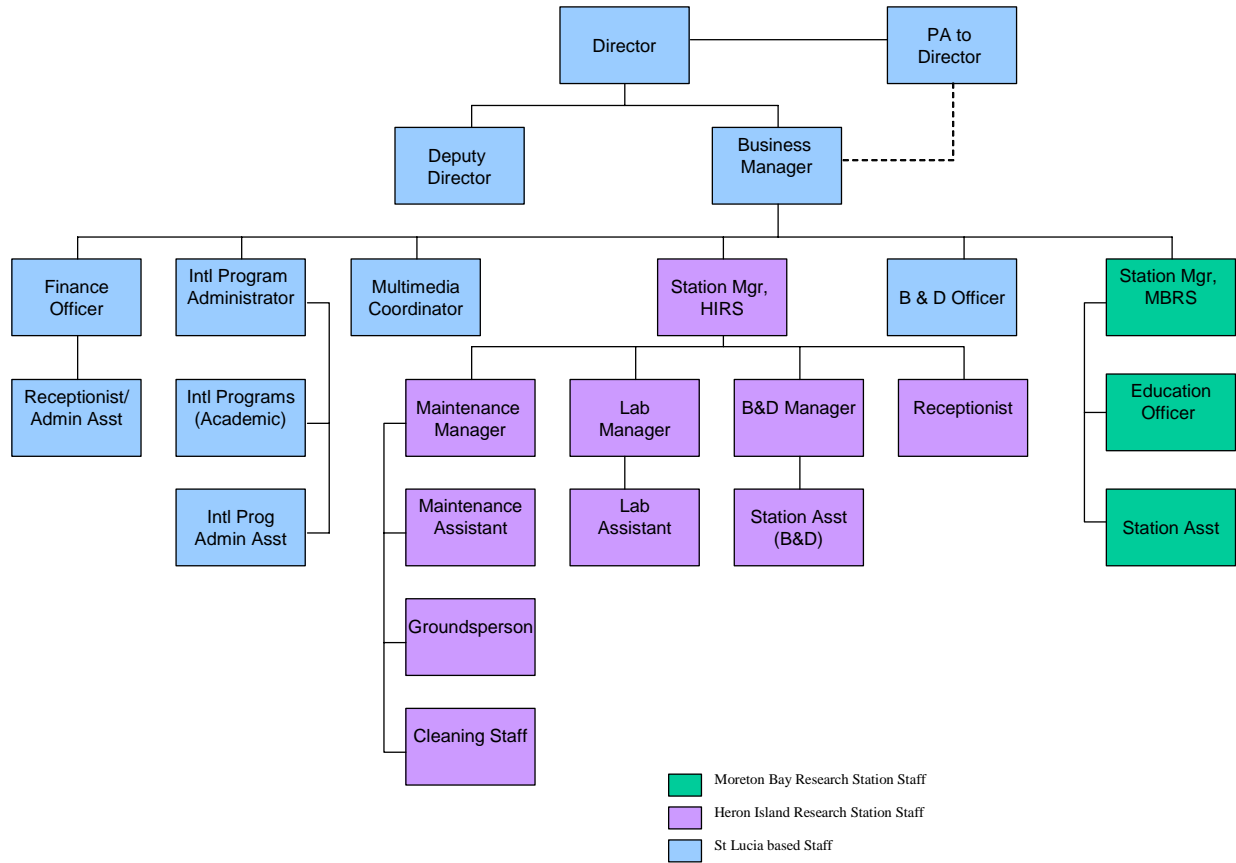
<p>13. Education, course curricula</p>	<p>The Centre for Marine Studies acts as a major focus for Great Barrier Reef and South East Queensland research and education and has a large variety of resources for researchers, students and industry professionals</p> <p>The University has made a considerable investment in high quality marine teaching and research functions and its marine research facilities are of world standard. Strong postgraduate training arises from a wide range of cutting-edge research programs, led by dynamic academic staff.</p> <p>Students can take advantage of the breadth and depth of expertise which is present at the University in the marine area - from marine biology to coastal management, aquaculture and maritime law.</p>
<p>Regional collaboration</p>	
<p>14. Local / regional partners, linkages to NGOs, government agencies</p>	<p>CMS/UQ has linkages at both state and federal levels. Its scientists are on key advisory committees – including the Biodiversity Advisory Committee (OHG – this feeds into the federal equivalent). This committee sets listing for organisms among other things – e.g. the Convention of Biological Diversity. CMS and UQ are both connected via its officials to state and federal government ministers. IOC has regional representation via the PEA and its Australian delegates. These link directly to the Federal government.</p>
<p>15. Regional and international research partners / networks</p>	<p>The Centre is a member of the Tropical Marine Network. The Tropical Marine Network is a joint research and teaching program of the University of Sydney, the University of Queensland, James Cook University and the Australian Museum. This network involves six research stations and stretches over 1600 km of the Great Barrier Reef. Stations involved are: Moreton Bay Research Station, Heron Island Research station, Low Isles Research Station (3 stations run by the University of Queensland); One Tree Island Research Station (University of Sydney), Orpheus Island Research Station (James Cook University) and Lizard Island Research Station (Australian Museum).</p> <p>The Centre for Marine Studies is involved in international research and linkages, CMS Deputy Director is secretary of WIOMSA Board and has projects in East Africa (Tanzania); The Director is on the council of ISRS, Discussions have been held to form an extension of the TMN across the Pacific (including the Berkeley research station on Moorea). The CMS has a MacArthur Foundation proposal in the Solomons starting this year (Dr Norm Duke, “Conserving the Marine Biodiversity of Marovo Lagoon, Solomon Islands.”). CMS has been instrumental in the formation of the Great Barrier Reef Research Foundation that has an international office (in SF) and has international development and marine conservation in its mandate. The CMS Director serves on the International Scientific Advisory Committee of the Foundation.</p> <p>The Centre is also a major player in the Australian Coral Reef Society and the Australian Marine Sciences Association.</p> <p>Close linkages to Great Barrier Reef Marine Park Authority (GBRMPA)</p>

	<p>Examples of international research projects:</p> <p>2003-2006: Tracing the origins of stress in the symbionts of reef-building corals. (ARC Large, DP0346647), partners in USA.</p> <p>2004-2006: Solar radiation, coral bleaching and climate change. (ARC Large, DP0453361), Partners in USA, Mexico, Denmark.</p> <p>2004-2006: Ecology, physiology and molecular microbiology of coral disease on the Great Barrier Reef. (ARC Linkage, LP0453609); Partners in Israel.</p> <p>2002-2006: Vision and remote sensing: using nature's technology to examine the health of The Great Barrier Reef and Moreton Bay. (ARC Linkage, LP0214956), partners in Russia.</p> <p>Extensive collaboration with NOAA's Coral Reef Watch program</p>
<p>16. Student exchange, region or overseas</p>	<p>The Centre for Marine Studies has a distinguished record in the field of international education. All study packages for international students and student groups are designed to make the most of the wonderful marine life that abounds on the Queensland coast. Students may invariably expect to spend time at our premier research stations on Moreton Bay and the Great Barrier Reef. The staff at the Centre for Marine Studies and associated faculties include leaders in many fields of marine studies.</p> <p>Among CMS programs are:</p> <ul style="list-style-type: none"> • Study Abroad courses open to students enrolled with the University of Queensland; • Contract Programs for overseas college groups; • Special Short Courses in topics in marine studies. • Technical specialty courses (e.g. PAM fluorometry, ecotoxicology, Coastal zone management) <p>International Students are also welcome to enroll in Undergraduate and Postgraduate studies at the University of Queensland.</p>
<p>17. Linking science to management and policy advise,</p>	<p>The Centre is linked into local partners at the Queensland State government level. At the Federal level, the Centre has strong linkages with the Great Barrier Reef Park Management Authority and the Australian Institute of Marine Science.</p>
<p>18. Linkages to local or regional NGOs, activities/projects with relevance to GEF TR</p>	<p>CMS has a large number of research projects in the area of coral reefs, coastal zone management and climate change. These are mostly funded by the Australian Research Council or by local stakeholder funding (e.g. Natural Heritage Funding).</p>
<p>19. Linkages to GEF TR working groups and COE activities</p>	<p>The CMS Director is the Chair of the BWG, the Deputy Director is member of the BWG, close research collaboration exist with DWG and RSWG. Training workshops (of graduate students/researchers from BML and other marine labs and coastal resource managers) in field techniques developed by the WGs e.g., inventorying disease, pathogens; deploying stress markers and other monitoring tools. Dialogue and Outreach on implications of research results in the context of local issues (e.g., connectivity findings, reef restoration techniques, disease incidence and epizootiology).</p>

20. Outreach strategy	Pending
21. Linking TR findings to regional managers and government officials	Pending
Laboratory logistics	
22. HIRS - Research facilities, facilities and equipment available - highlight what is needed from GEF project:	<p>a. Main support labs</p> <p><u>St Lucia</u> (Gehrmann Building)</p> <ul style="list-style-type: none"> • Seven large academic research laboratories and office complexes • Eight administration offices. <p><u>Heron Island Research Station</u></p> <p>Note that all buildings listed (except the 6 researcher cabins) have been rebuilt in the past 3 years.</p> <ol style="list-style-type: none"> a. 2 teaching laboratories b. 3 molecular laboratories c. 3 marine laboratories d. Accomodation complex for 72 scientists or students e. 6 researcher cabins (accommodating 40 scientist or students) f. Aquarium with fast flowing seawater supply g. Instrument room <p>Scientific services</p> <p>Five research laboratories (2 with fume cabinets) can provide for up to 15 principal researchers and 20 research assistants. There are two teaching laboratories, each capable of accommodating up to 45 students.</p> <p>Laboratories contain basic equipment which can be supplemented to meet individual researcher needs from our extensive range of specialist scientific equipment. Researchers are provided with 24 hour access to a well stocked laboratory equipment store. The extensive aquaria systems are supplied with sea water drawn directly from the adjoining Heron/Wistari channel.</p> <p>The station's small but well stocked reference library can be accessed on demand. There are two fully equipped seminar rooms suitable for groups of 40 - 45 persons each.</p> <p>The station has two air-conditioned computer rooms allowing access to both undergraduate students and researchers, the 14 PCs available all have the latest word processing and spreadsheet software installed and are networked to allow access to CD-RW, scanners, printers and data projectors. Email access can be provided to researchers, however POP account details are required. Two Apple PowerMacs are also available for use.</p> <p>The station keeps a stock of commonly used chemicals for purchase; any other chemicals required can be provided by the station.</p>

Cont.	<p>Boating Heron Island has 3 x 4.3m open aluminium boats, 2 x 5.8m fibreglass "Southwind" centre consoles with canopy, a 5.8m Hydrofield and a 5.9m large passenger carrier. Capacity varies from 5 persons up to 18 persons; vessels are mainly powered by 4 stroke outboard motors. All vessels are kept in 2C survey and the fleet is regularly upgraded.</p> <p>c. Dive gear The Station has SCUBA and snorkeling equipment for hire but does not supply wetsuits or booties. At times these may be available from the adjoining P & O resort, however visitors are required to bring their own. Snorkeling and SCUBA diving are conducted in accordance with the requirements of the Scientific Diver advisory standards and Recreational Snorkeling code of practice.</p>
23. Training and seminar facilities	There are 3 teaching laboratories and seminar room can be interconnected to produce a seminar room that can hold 140 people.
24. Accommodation	130 people
25. Routine environmental data being logged at field station?	<p>The station logs visibility, rain gauges, Temp max, T min, Humidity, Pressure, wind direction and speed. Water measurements are also made. These include: Tide, Temp max, T min, State of Sea, Observer comments, tidal height, salinity and Visibility (m).</p> <p>Hoegh-Guldberg lab on Heron Island has half the funds for a CREWS station. It is hoped to install this facility in 2004.</p>
26. Historical data and other background information on site	Extensive records of routine monitoring data and key environmental variables
27. Publications/literature reporting COE research	Extensive – over 500 refereed publications. See separate annex
28. Internet facilities	The station has a well developed network and internet. It is relatively fast, based on a Satellite broadband link.
29. Video-conferencing facilities:	None
30. Catering arrangements	Catering is done on a contract by contract basis. Meals can generally be arranged on a Aus\$25 per person per day basis.

Centre for Marine Studies Administrative Structure



Administrative structure of the Centre for Marine Studies, University of Queensland