

Assessment report  
Limited Framework Programme Assessment

**Master Earth Sciences**

University of Amsterdam

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## 1. Executive summary

In this executive summary, the panel presents the main considerations which led to the assessment of the quality of the Master Earth Sciences programme of University of Amsterdam, which has been assessed according to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, as published on 20 December 2016 (Staatscourant nr. 69458).

The programme objectives are relevant and sound. The panel welcomes students being offered the opportunities to specialise in one of the tracks of the programme. The panel welcomes the efforts by the joint Earth Sciences programmes in the Netherlands to draft the domain-specific reference framework for the Earth Sciences and regards this to be the sound and up-to-date description of the domain. Although the programme objectives correspond to this framework, the panel regards the programme to be situated at the boundaries of the framework and advises to ensure all tracks of the programme to meet minimal Earth Sciences domain requirements.

The panel is positive about students being prepared for positions within the programme domain in both academia and in various parts of society. In addition, the panel welcomes students being given the chance to prepare for positions as teachers, science communication experts or managers or advisors in science.

The intended learning outcomes of the programme cover the intended learning outcomes of the tracks, correspond to the programme objectives, are complete and conform to the master level.

The panel supports programme management plans to raise the inflow numbers. Although the admission requirements are satisfactory, the panel advises to state them in more pertinent terms and to synchronise them across the programme tracks. The panel recommends to make the admission procedures more transparent and verifiable. In addition, the panel proposes to define the pre-master programme. The panel notes that students are expected to be largely self-reliant in the programme. Therefore, the panel suggests to prepare incoming students in that sense.

The panel ascertained the curriculum of each of the tracks to meet the intended learning outcomes of the tracks and of the programme. The courses are up to standard. The panel sees room to increase the study load and advises to reinforce the Earth Sciences components in the curriculum. The research-base of the curriculum is up to standard. The curriculum also offers students ample opportunities to acquire research knowledge and skills and academic skills. The panel considers the curriculum to be coherent. The panel suggests to synchronise the study load of the Master Thesis Research projects across the tracks.

The panel regards the lecturers in the programme to be capable researchers and skilled lecturers. Their educational capabilities are up to standard, as the proportions of BKO- or SKO-certified lecturers show. The lecturers' workload is appropriately managed. The interaction among lecturers is adequate.

The panel considers the educational concept and study methods to be up to standard. The programme promotes student-activating learning and offers varied study methods. The number of hours of face-to-face education are satisfactory. The panel is positive about the study guidance. As the drop-out rates and student success rates are disappointing, the panel suggests to reduce the drop-out rates and to improve the student success rates.

The panel regards the examinations and assessment rules and regulations of the programme as adequate, these being in line with Faculty of Science guidelines and policies. Although the position of the Examinations Board is appropriate, the panel advises the Board to be more pro-active and more independent in assuring the examinations and assessments quality of the programme. The panel considers the measures ensuring the validity, reliability and transparency of examinations and assessments to be satisfactory.

The examination methods adopted by the programme are appropriate and are consistent with goals and contents of the courses. The panel is positive about the assessment scoring forms and the assessments by two examiners for the individual curriculum components.

The supervision and assessment processes for Master Thesis Research projects have been organised well. Students are offered appropriate supervision. The assessment procedures are up to standard, involving two examiners assessing the work separately and on the basis of assessment scoring forms.

The Master Thesis Research projects are regarded by the panel to be very much up to standard. The theses the panel studied definitely match the intended learning outcomes of the programme. The grades of the projects being rather high, the panel supports the grades given by the programme examiners. The panel regards the projects to be based upon well-founded literature research, to exhibit extensive analyses and to display well-elaborated discussion of results.

The panel greatly appreciates the relatively large proportion of graduates who have been able to be first-author or co-author of peer-reviewed scientific publications.

The panel considers the programme graduates to have reached the intended learning outcomes and to be qualified to find appropriate positions in the relevant professional field.

The panel which conducted the assessment of the Master Earth Sciences programme of University of Amsterdam assesses this programme to meet the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, judging the programme to be satisfactory. Therefore, the panel advises NVAO to accredit the programme.

Rotterdam, 25 March 2019

Prof. dr. ir. A. Veldkamp  
(panel chair)

drs. W. Vercouteren  
(panel secretary)

## 2. Assessment process

The evaluation agency Certiked VBI received the request by University of Amsterdam to organise the limited framework programme assessment process for the Master Earth Sciences programme of this University. The objective of the programme assessment process was to assess whether the programme would conform to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458).

Having conferred with management of the University of Amsterdam programme, Certiked invited candidate panel members to sit on the assessment panel. The panel members agreed to do so. The panel composition was as follows:

- Prof. dr. ir. A. Veldkamp, dean ITC Faculty of Geo-Information and Earth Observation, University of Twente, the Netherlands (panel chair);
- Drs. T.M. van Daalen, director Geological Survey of the Netherlands, Netherlands Organisation for Applied Scientific Research, the Netherlands (panel member);
- Prof. dr. ir. N.E.C. Verhoest, associate professor, Department of Environment, Ghent University, Belgium (panel member);
- L. Roelofs BSc, student Master Earth Surface and Water, Faculty of Geosciences, Utrecht University, the Netherlands (student member).

On behalf of Certiked, drs. W. Vercouteren served as the process coordinator and secretary in the assessment process.

All panel members and the secretary confirmed in writing being impartial with regard to the programme to be assessed and observing the rules of confidentiality. Having obtained the authorisation by the University, Certiked requested the approval of NVAO of the proposed panel to conduct the assessment. NVAO has given its approval.

To prepare the assessment process, the process coordinator convened with management of the programme to discuss the outline of the self-assessment report, the subjects to be addressed in this report and the site visit schedule. In addition, the planning of the activities in preparation of the site visit were discussed. In the course of the process preparing for the site visit, programme management and the Certiked process coordinator regularly had contact to fine-tune the process. The activities prior to the site visit have been performed as planned. Programme management approved of the site visit schedule.

Well in advance of the site visit date, programme management sent the list of final projects of graduates of the programme of the last two years. Acting on behalf of the assessment panel, the process coordinator selected the theses of fifteen graduates from the last few years. The grade distribution in the selection was ensured to conform to the grade distribution in the list, sent by programme management. The programme specialisations or tracks were represented in the selection. Final projects of the Future Planet Ecosystem Science track were not yet available.

The panel chair and the panel members were sent the self-assessment report of the programme, including appendices. In the self-assessment report, the student chapter was included. In addition, the expert panel members were forwarded a number of theses of the programme graduates, these theses being part of the selection made by the process coordinator.

Well before the site visit date, the assessment panel chair and the process coordinator met to discuss the self-assessment report provided by programme management, the procedures regarding the assessment process and the site visit schedule. In this meeting, the profile of panel chairs of NVAO was discussed as well. The panel chair was informed about the competencies, listed in the profile. Documents pertaining to a number of these competencies were presented to the panel chair. The meeting between the panel chair and the process coordinator served as the briefing for panel chairs, as meant in the NVAO profile of panel chairs.

Prior to the date of the site visit, all panel members sent in their preliminary findings, based on the self-assessment report and the final projects studied, and a number of questions to be put to the programme representatives on the day of the site visit. The panel secretary summarised this information, compiling a list of questions, which served as a starting point for the discussions with the programme representatives during the site visit.

Shortly before the site visit date, the complete panel met to go over the preliminary findings concerning the quality of the programme. During this meeting, the preliminary findings of the panel members, including those about the theses were discussed. The procedures to be adopted during the site visit, including the questions to be put to the programme representatives on the basis of the list compiled, were discussed as well.

On 14 January 2019, the panel conducted the site visit on the University of Amsterdam campus. The site visit schedule was as planned. In a number of separate sessions, the panel was given the opportunity to meet with Faculty Board representatives, programme management, Examinations Board members, lecturers and final projects examiners, students, and alumni and professional field representatives.

In a closed session at the end of the site visit, the panel considered every one of the findings, weighed the considerations and arrived at conclusions with regard to the quality of the programme. At the end of the site visit, the panel chair presented a broad outline of the considerations and conclusions to programme representatives.

Clearly separated from the process of the programme assessment, assessment panel members and programme representatives met to conduct the development dialogue, with the objective to discuss future developments of the programme.

The assessment draft report was finalised by the secretary, having taken into account the findings and considerations of the panel. The draft report was sent to the panel members, who studied it and made a number of changes. Thereupon, the secretary edited the final report. This report was presented to programme management to be corrected for factual inaccuracies. Programme management were given two weeks to respond. Having been corrected for these factual inaccuracies, the Certiked bureau sent the report to the Board of University of Amsterdam, to accompany their request for re-accreditation of this programme.

### 3. Programme administrative information

Name programme in CROHO: M Earth Sciences  
Orientation, level programme: Academic Master  
Grade: MSc  
Number of credits: 120 EC  
Tracks: Geo-Ecological Dynamics  
Future Planet Ecosystem Science  
Environmental Management  
Location: Amsterdam  
Mode of study: Full-time (language of instruction English)  
Registration in CROHO: 21PK-66986  
Name of institution: University of Amsterdam  
Status of institution: Government-funded University  
Institution's quality assurance: Approved

## 4. Findings, considerations and assessments per standard

### 4.1 Standard 1: Intended learning outcomes

The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

#### *Findings*

The Master Earth Sciences programme is one of the master programmes of the Faculty of Science of University of Amsterdam. The dean of the Faculty has the responsibility for all programmes of the Faculty. This Master programme is part of the Graduate School of Life and Earth Sciences of the Faculty. The director of the programme is responsible for the contents, quality and implementation of the programme. The programme director is assisted by the track coordinators and the study counsellor. The Programme Committee for the programme, being composed of equal numbers of lecturers and students, advises programme management on quality issues. The Examinations Board of Earth and Life Sciences, and the chapter for Earth Sciences of this Board in particular, monitor the quality of examinations and assessments of the programme. The research base for the programme is primarily provided for by the Institute for Biodiversity and Ecosystems Dynamics, one of the research institutes of the Faculty.

The Master Earth Sciences of University of Amsterdam is a two-year, research-based, academic master programme in the multi-disciplinary Earth Sciences domain. The programme objectives are to educate students in the behaviour and interaction of environmental processes which affect the Earth's surface. The programme objectives are to study and understand scientific concepts and theories of physical geography, to understand processes on the Earth's surface and to study global change landscape management and ecosystem functioning. The programme is directed towards concepts and theories of physical geography and ecosystems and may be said to be an Earth Sciences programme with ecological dimensions. Students are trained to approach concepts and theories from multi-disciplinary angles and to take societal context into account. The programme is strongly research-based and students are educated in scientific research in this domain.

The programme offers three tracks, being the Geo-Ecological Dynamics, Environmental Management and Future Planet Ecosystem Science tracks. The Future Planet Ecosystem Science track was only introduced in 2017/2018. In the Geo-Ecological Dynamics track, which may be said to be the most Earth Sciences-oriented track, the relationships between biogeochemical and environmental processes and influences of climate change and direct human impact upon geo-ecosystems are studied. The Environmental Management track is directed towards the study of geo-ecological aspects of environmental systems and the management of these systems. This track includes the study of social geography dimensions. The Future Planet Ecosystem Science track finds itself at the interface of earth sciences and ecology. In this track, human-ecosphere interactions and geo-ecological consequences of local and global change in land use, eutrophication, pollution and climate are studied.



The programme has been benchmarked against the Earth Sciences domain-specific reference framework, which has been drafted by the joint Earth Sciences programmes in the Netherlands. The objectives of the programme conform to this framework.

The programme trains students to enter the labour market, preparing them for a wide range of positions in the programme domain. The programme prepares students for positions as PhD students or junior researchers in academia as well as for positions in government, non-governmental organisations or private companies. In addition to the tracks mentioned, students may take one of the majors Teaching, Science Communication or Science in Society. These majors prepare them for careers as fully qualified teachers in Dutch education, science communication experts or for advisory or managerial positions in science.

The programme objectives have been translated into the intended learning outcomes of the programme. The intended learning outcomes include, as main points, understanding, analysing and solving scientific problems in the programme domain, specialist knowledge of one of the tracks, analysis of environmental systems, knowledge and skills to carry out research, skills to work independently and in teams, skills to add to the solutions of multi-disciplinary problems, and critical awareness. For each of the tracks mentioned, specific intended learning outcomes have been drafted, which are covered by these general programme intended learning outcomes.

Programme management presented the comparison of the intended learning outcomes to the Dublin descriptors for the master level.

#### *Considerations*

The panel considers the programme objectives to be relevant and sound. The panel welcomes students being offered the opportunities to specialise in one of the tracks of the programme.

The panel welcomes the efforts by the joint Earth Sciences programmes in the Netherlands to draft the domain-specific reference framework for the Earth Sciences and regards this to be the sound and up-to-date description of the domain. Although the programme objectives correspond to this framework, the panel regards the programme to be situated at the boundaries of the framework and advises to ensure all tracks of the programme to meet minimal Earth Sciences domain requirements.

The panel is positive about students being prepared for positions within the programme domain in both academia and in various parts of society. In addition, the panel welcomes students being given the chance to prepare for positions as teachers, science communication experts or managers or advisors in science.

The programme intended learning outcomes correspond to the programme objectives, are complete and conform to the master level. The intended learning outcomes of the tracks meet the programme intended learning outcomes.

#### *Assessment of this standard*

These considerations have led the assessment panel to assess standard 1, Intended learning outcomes, to be satisfactory.

## 4.2 Standard 2: Teaching-learning environment

The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

### *Findings*

The number of incoming students in the last five years rose from about 20 students in 2012, 2013 and 2014 to about 30 students in the last few year 2016 and 2017. the inflow being rather stable across these years. The programme wants to raise the influx to about 60 students, to allow for about 20 students for each of the tracks. Most students come from the Bachelor Future Planet Studies, major Earth Sciences of University of Amsterdam. About 30 % of the incoming students are from abroad. The remainder of the students come from other Dutch universities. The admission requirements of the programme are having completed Bachelor Earth Sciences, Future Planet Studies, or Beta-gamma programmes with the Earth Sciences major. Students with these degrees and their major in Biology are admitted to the Future Planet Ecosystem Science track. Students with Bachelor Biology, Chemistry or Computer Science degrees or related degrees are admitted, depending upon their course list. Any deficiencies may be remedied by studying literature and passing the subsequent test. International students have to meet equivalent requirements to be admitted. The programme Admission Committee, on which sit the programme director and the track coordinators, screens applications. At the start of the programme, students are informed about the curriculum structure and research done by research groups.

The curriculum of the programme takes two years and carries 120 EC of study load. For all tracks in the programme, tables were presented, showing the mapping of the intended learning outcomes and the courses. The first course *Vulnerability Assessment of Geo-Ecosystems* (12 EC) is mandatory for all three tracks. This course introduces students to the programme domain, builds on students' backgrounds, acquaints them with research in this field and gives them the flavour of studying this programme. For each of the tracks, compulsory, constrained-choice and elective courses are scheduled. These courses are scheduled in the first year and depend upon the track chosen. Mathematics and physics subjects are integrated in the courses. In the courses, journal articles on current subjects are presented and ongoing research is introduced. Elective courses to be selected may be restricted by the Master Thesis project subject. All students take the *Research Workshop and Skills Lab* course, which consists of monthly meetings and is scheduled across the two years. In this course, students work on their academic skills. The course is strongly individualised, allowing students to select skills. In the second year, individual projects dominate. In the Geo-Ecological Dynamics track, students draft a Literature Review (12 EC). The Literature Review is the detailed study of literature on a specific topic, this topic being different from the Master Thesis subject. These students also complete the Master Thesis Research project (30 EC to 42 EC), being the individual scientific research project, preceded by the Research Proposal (6 EC). Students in the Environmental Management track, do the Internship (18 EC to 24 EC) and complete the Master Thesis Research project (30 EC), preceded by the Research Proposal (6 EC). The Internship is optional in the other tracks and allows students to acquire practical experience in professional settings. In the Future Planet Ecosystem Science track, students complete the Master Thesis Research project (30 EC to 42 EC).

These students have the options to draft a Literature Review and take courses or complete a second Master Thesis project (30 EC).

A total number of 34 core lecturers are involved in the programme. The lecturers are active researchers in their fields, ensuring research-based lectures. The vast majority of the lecturers are researchers of the Institute for Biodiversity and Ecosystems Dynamics of the Faculty of Science. All staff members have PhD degrees. Of the total number of lecturers 79 % are BKO-certified and 12 % are SKO-certified. Another 12 % are in the process to acquire either one of these certificates. Lecturers experience the workload as demanding, but manageable. Lecturers' meetings are scheduled twice per year to discuss the programme. Students indicate to be content about lecturers' performances and accessibility. Expert guest lecturers are involved in the programme.

The educational concept of the programme is open, research-based teaching and learning. The programme objectives are to engage students actively in the learning processes and to stimulate learning by offering diversity in learning approaches, including blended learning. Teaching and learning are small-scale. Student groups are composed of students with different backgrounds to promote the international classroom. The number of hours of face-to-face education is about 10 to 15 hours per week in the first year, depending upon the track chosen. In the individualised second year, these numbers are about 3 hours per week. Study methods adopted in the programme are lectures, seminars, computer classes, laboratory classes, fieldwork, and site visits. The curriculum is very flexible, especially after the first semester. Students are expected to draft their Personal Education Plans at the beginning of the programme. These are verified by the Examinations Board. The track coordinators assist students in drafting these plans. Near the end of the programme, the plans are updated. The study counsellor is available for study guidance, monitors the study progress of students and invites them to discuss any study delays. The study association regularly schedules events. These foster the community building of the student group. The drop-out rates for the programme are on average 15 % for the last years. The student success rates are on average 12 % after two years and 45 % after three years for the last years.

### *Considerations*

The panel supports programme management plans to raise the inflow numbers. Although the admission requirements are satisfactory, the panel advises to state them in more pertinent terms and to synchronise them across the programme tracks. The panel recommends to make the admission procedures more transparent and verifiable. In addition, the panel proposes to define the pre-master programme. The panel notes that students are expected to be largely self-reliant in the programme. Therefore, the panel suggests to prepare incoming students in that sense.

The panel ascertained the curriculum of each of the tracks to meet the intended learning outcomes of the programme. The courses are up to standard. The panel sees room to increase the study load and advises to reinforce the Earth Sciences components in the curriculum. The research-base of the curriculum is up to standard. The curriculum also offers students ample opportunities to acquire research knowledge and skills and academic skills. The panel considers the curriculum to be coherent. In addition, the panel suggests to synchronise the study load of the Master Thesis Research projects across the tracks.

The panel regards the lecturers in the programme to be capable researchers and skilled lecturers. Their educational capabilities are up to standard, as may be deduced from the proportions of BKO- or SKO-certified lecturers. The lecturers' workload is appropriately managed. The interaction among lecturers is adequate.

The panel regards the educational concept and study methods to be adequate. The programme promotes student-activating learning and offers varied study methods. The number of hours of face-to-face education are satisfactory. The panel is positive about the study guidance. As the drop-out rates and the student success rates are disappointing, the panel suggests to reduce the drop-out rates and to improve the student success rates.

*Assessment of this standard*

These considerations have led the assessment panel to assess standard 2, Teaching-learning environment, to be satisfactory.

### 4.3 Standard 3: Student assessment

The programme has an adequate system of student assessment in place.

#### *Findings*

The programme examination and assessment procedures are set out in the programme assessment plan and are aligned with Faculty of Science quality assurance guidelines and policies. As has been mentioned in section 4.1, the Examinations Board for the programme has the authority to monitor the quality of examination and assessment processes and products.

The examination methods for the courses are selected in line with the courses' contents. In all of the courses, multiple examinations are scheduled. The examination methods in the programme include written examinations, written reports, assignments, and oral presentations. For the individual curriculum components Literature Review, Research Proposal, Internship project, Master Thesis project interim evaluation and Master Thesis project, assessment forms have been designed. These forms include assessment criteria and grading schemes. Two examiners assess these individual projects.

As has been indicated, students complete the Master Thesis Research project to demonstrate their competencies to perform individual research. Some students in the Future Planet Ecosystem Science may complete two projects. Project requirements and formalities are outlined in the Master Thesis Research Protocol. Subjects for the projects are presented by staff members and should meet Institute for Biodiversity and Ecosystems Dynamics and Graduate School requirements. The Research Proposal is assessed and graded separately. At the start of projects, students are to draft the time table. Supervision of projects is in the hands of one of the programme staff members. Day-to-day supervision may be delegated to PhD students or postdoctoral fellows. Halfway through the project, the supervisor and co-assessor assess the results. At completion, the project is assessed by the supervisor and the co-assessor independently. The co-assessor will only assess the report. The day-to-day supervisor or the external supervisor, should this be the case, may give advice. The assessment components are thesis (50 % of grade), research (30 %), presentation (10 %) and efficiency (10 %). These assessment components have been clarified by a range of detailed criteria. In case the assessments of the supervisor and the co-assessor differ more than 1.0 point, a third examiner will be asked to assess the thesis and to determine the grade. All theses are checked for plagiarism.

Programme management and the Examinations Board have taken a number of measures to promote the validity, reliability and transparency of examinations and assessments. As has been indicated, the programme assessment plan has been drafted, detailing quality assurance measures. The Examinations Board appoints examiners, who should have PhD degrees and ought to be BKO-certified. For all of the courses, course records have been drafted to document examinations and assessments of the courses. Test matrices for the examinations are part of the course records. Examinations are peer-reviewed by fellow-lecturers. The Examinations Board on a regular basis invites examiners to review samples of course records, literature reviews, and Master research projects. Cases of plagiarism or fraud are to be reported to the Examinations Board, who will handle them.

### *Considerations*

The panel regards the examinations and assessment rules and regulations of the programme to be adequate, these being in line with Faculty of Science guidelines and policies.

Although the position of the Examinations Board is appropriate, the panel advises the Board to be more pro-active and more independent in assuring the examinations and assessments quality of the programme.

The panel approves of the examination methods adopted by the programme. These methods are consistent with the goals and contents of the courses. The panel is positive about the assessment scoring forms and the assessments by two examiners for the individual curriculum components.

The supervision and assessment processes for Master Thesis Research projects have been organised well. Students are offered appropriate supervision. The assessment procedures are up to standard, involving two examiners assessing the work separately and on the basis of assessment scoring forms.

The panel considers the measures ensuring the validity, reliability and transparency of examinations and assessments to be satisfactory.

### *Assessment of this standard*

The considerations have led the assessment panel to assess standard 3, Student assessment, to be satisfactory.

#### 4.4 Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.
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##### *Findings*

The panel studied a total of fifteen Master Thesis Research projects of graduates of the programme. The average grade for these projects in the last few years is 8.0. A substantial proportion of graduates of the programme succeed in being first-author or co-author of peer-reviewed scientific papers in international journals, mostly based upon their Master thesis projects. Between 2012 and 2018, 21 publications were listed, in 15 of which students were the first author.

The programme conducted a survey on programme graduates' careers. The results of this survey show the programme graduates to be content with their current positions and their career opportunities. Graduates tend to find suitable positions rather easily. They are employed in research (35 %), consultancy (30 %), government positions (22 %) or education (9 %).

##### *Considerations*

The Master Thesis Research projects are regarded by the panel to be very much up to standard. The theses the panel studied definitely match the intended learning outcomes of the programme. The grades of the projects being rather high, the panel supports the grades given by the programme examiners. The panel regards the projects to be based upon well-founded literature research, to exhibit extensive analyses and to display well-elaborated discussion of results.

The panel greatly appreciates the relatively large proportion of graduates who have been able to be first-author or co-author of peer-reviewed scientific publications.

The panel considers the programme graduates to have reached the intended learning outcomes and to be qualified to find appropriate positions in the relevant professional field.

##### *Assessment of this standard*

The considerations have led the assessment panel to assess standard 4, Achieved learning outcomes, to be good.

## 5. Overview of assessments

Standard	Assessment
Standard 1. Intended learning outcomes	Satisfactory
Standard 2: Teaching-learning environment	Satisfactory
Standard 3: Student assessment	Satisfactory
Standard 4: Achieved learning outcomes	Good
Programme	Satisfactory



## 6. Recommendations

In this report, recommendations by the panel have been listed. For the sake of clarity, these have been brought together below. These panel recommendations are the following.

- To ensure all tracks of the programme to meet minimal Earth Sciences domain requirements.
- To state the admission requirements in more pertinent terms and to synchronise them across the programme tracks.
- To make the admission procedures more transparent and verifiable.
- To define the pre-master programme for entry into the programme in case of deficiencies.
- To inform incoming students that they are expected to be largely self-reliant in the programme.
- To reinforce the Earth Sciences components in the curriculum, as there appears to be room to increase the study load of the curriculum.
- To synchronise the study load of the Master Thesis projects across the tracks.
- To reduce the drop-out rates and to improve the student success rates.
- For the Examinations Board to be more pro-active and more independent in assuring the examinations and assessments quality of the programme.