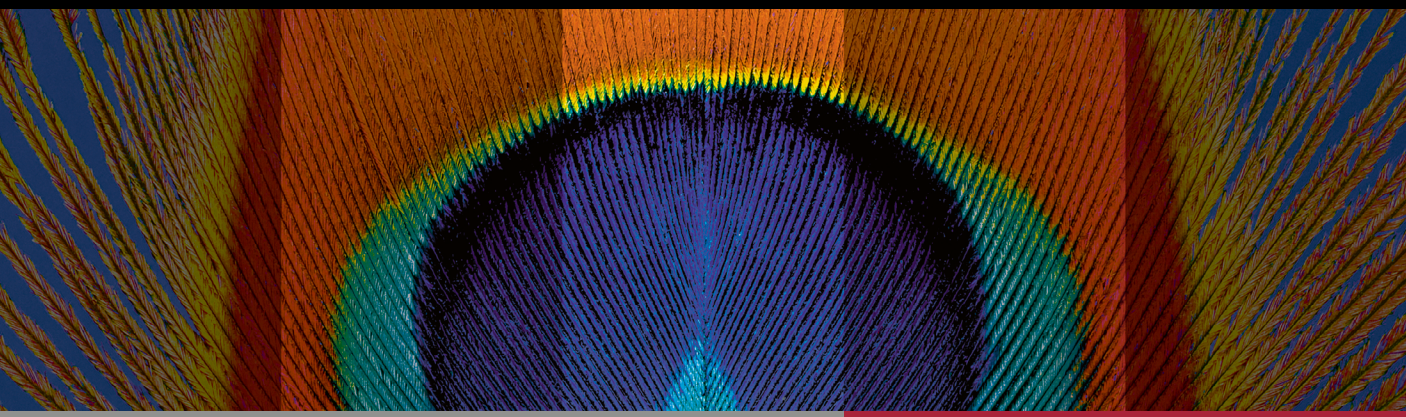
Quick Tutorial:

Baseline Check & Follow-up



SPECTRALIS®

Glaucoma Module Premium Edition

HEIDELBERG ENGINEERING

ACADEMY

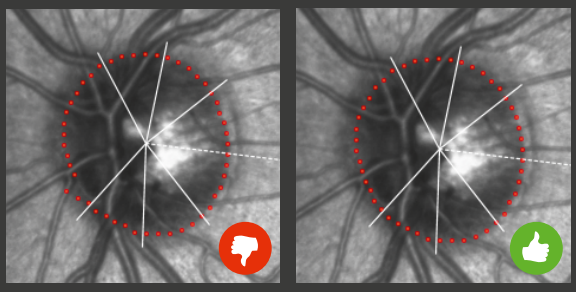
Confirming BMO Segmentation

The BMO segmentation needs to be confirmed right after image acquisition with the ONH-RC preset.

1. Open the ONH-RC scan by double-clicking the image thumbnail marked with APS .

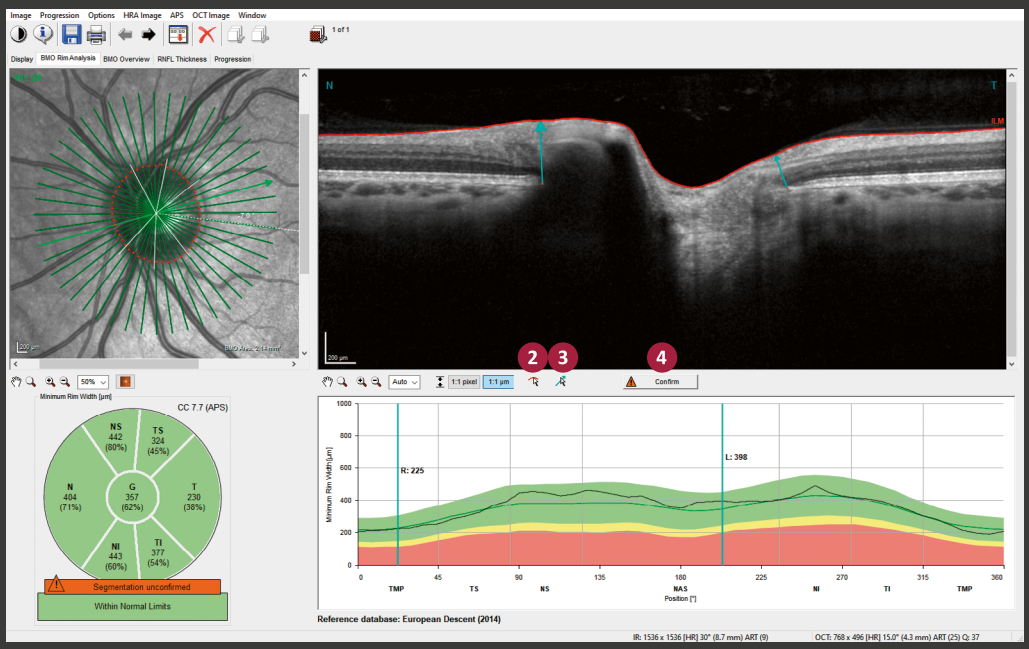
2. Check the segmentation of the inner limiting membrane (ILM) in each OCT section image and correct it, if necessary, via . For further information on how to use the Segmentation Editor, please refer to the SPECTRALIS Product Family User Manual.

3. Turn the mouse wheel and scroll through all OCT section images. Check the position of the red dots indicating the BMO locations in the infrared (IR) image as well as in the OCT section image and correct them if necessary via . For further information on editing the BMO points, please refer to the SPECTRALIS Glaucoma Module Premium Edition (GMPE) User Manual.



Abrupt kinks within the BMO contour line or an irregular, jagged BMO-MRW diagram may indicate an inaccurate BMO position.

4. Click **Confirm** to confirm both the BMO position and the ILM segmentation. The warning signs will disappear.



The baseline examination is set automatically as a reference image and marked with APS. Subsequent GMPE scans will then be acquired as part of a progression series.

Distance Between Scan Center and BMOC

Once the segmentation of the BMO locations in the baseline examination is confirmed, the true BMO center (BMOC) is defined as the geometric center of the 48 individual BMO points. For correct BMO-MRW/RNFLT analysis, it is important that the distance between the baseline scan center and the confirmed BMOC (△BMOC) is less than 100 µm.

If the distance between scan center and BMOC is > 100 µm, a window is displayed.

1. Choose **Set BMO center as a new scan center (Recommended)** whenever possible: The anatomic map with displaced landmarks will be deactivated. The thumbnail will be marked with [APS]. A new, corrected anatomic map based on the confirmed BMO points will be automatically created and a new baseline image must be acquired.

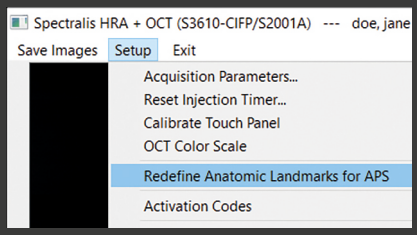
2. Choose **Continue with displaced scan center** only in the following cases:
   - It is not feasible or too difficult to reexamine the patient.
   - Long-term monitoring is planned, and you consider comparability over time more important than accuracy of the individual classification results. The displaced anatomic landmarks will be accepted and used for identifying the BMO center and the fovea in follow-up examinations.

Redefining Anatomic Landmarks

Redefine anatomic landmarks, e. g. when the fovea center was not defined correctly and acquire a new baseline image. The pre-existing progression series will be closed, and a new one begins.

1. Start a new examination and turn on the OCT. Select **Setup** and **Redefine Anatomic Landmarks for APS**.

2. A warning message indicating that new OCT scans will not be comparable to already acquired scans will show up. Click **OK** to confirm.



3. In the **Scan** section, **Start Fovea Detection** blinks. Define the anatomic landmarks as normal and select ONH-RC/PPole to start a new baseline examination.

Acquiring a Follow-up Image

1. Start a new follow-up examination by clicking **Follow-Up** or [APS ONH-RC] and [APS PPoleH] and acquire the images.

2. Open the ONH-RC scan by double-clicking an image thumbnail marked with [APS].

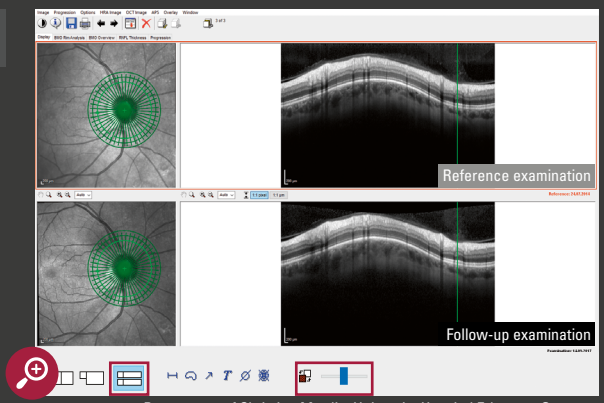
3. Check BMO positions and segmentation of the ILM in each OCT section image and correct it, if necessary. Click **Confirm**.

Analyzing Images: GMPE

Monitoring Thickness Changes

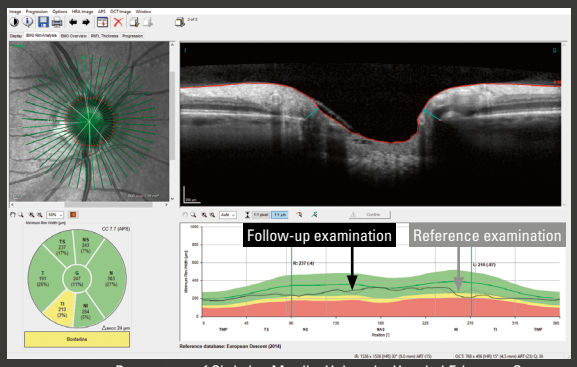
1 Display Tab

Reflectivity changes in the IR image as well as thickness changes in the OCT section image between the reference and follow-up examination can be quickly detected using the flicker function. Click on **Compare two Scans** and . Click to navigate backwards and forwards through the progression series.

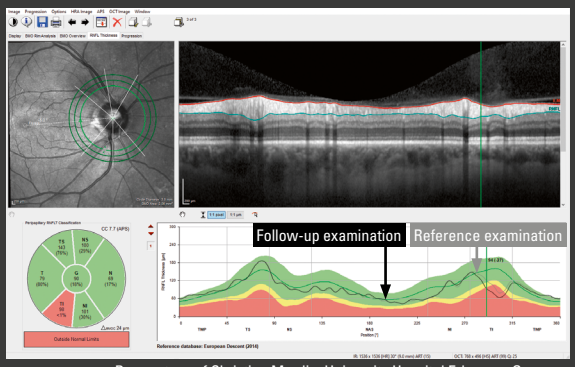


By courtesy of Christian Mardin, University Hospital Erlangen, Germany

2 BMO Rim Analysis & RNFL Thickness Tab



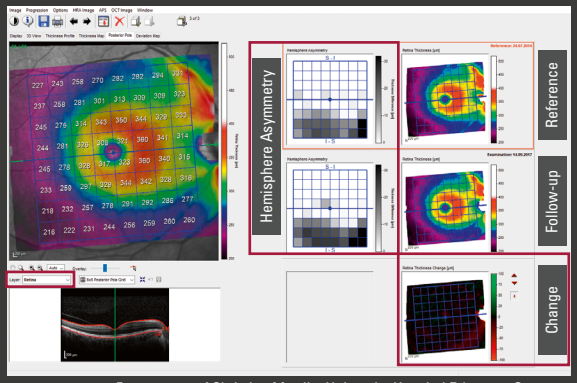
By courtesy of Christian Mardin, University Hospital Erlangen, Germany



By courtesy of Christian Mardin, University Hospital Erlangen, Germany

Compare reference and follow-up examination for global, diffuse or focal BMO-MRW/RNFL defects.

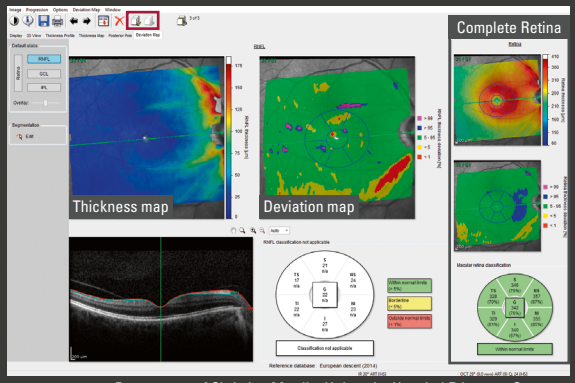
4 Posterior Pole Asymmetry Analysis



By courtesy of Christian Mardin, University Hospital Erlangen, Germany

Check **Change graph** for retinal thickness decrease (red) and **Hemisphere Asymmetry** for adjacent, deep gray squares which indicate a thickness decrease in contrast to the opposite hemisphere.

5 Deviation Maps



By courtesy of Christian Mardin, University Hospital Erlangen, Germany

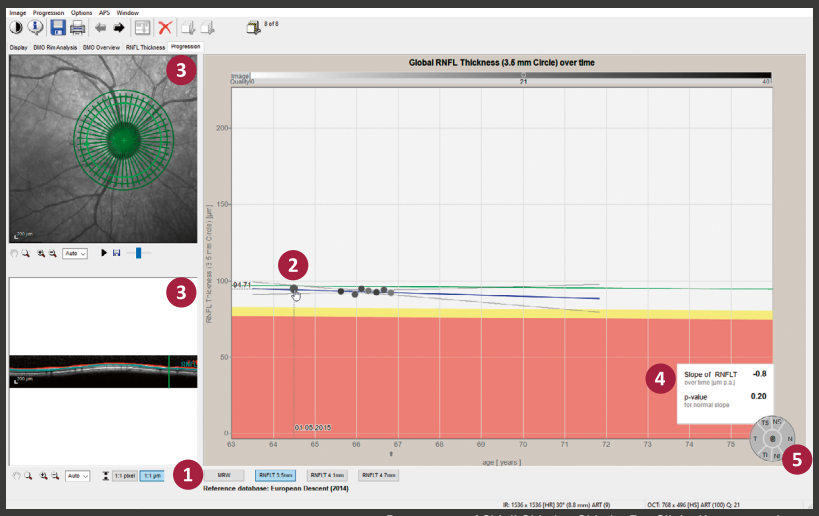
Click to navigate backwards and forwards through images in a progression series to compare the examinations.

View single layers such as GCL or RNFL by selecting the desired layer via **Layer** from the drop-down menu (Posterior Pole) or by clicking the respective buttons (Deviation Maps).

Analyzing Images: GMPE

Glaucoma Progression

The **Progression** tab shows the measured MRW or RNFL thickness over time, where each grey data point represents an examination.



By courtesy of Shinji Ohkubo, Ohkubo Eye Clinic, Kanazawa, Japan
and Kazuhisa Sugiyama, Kanazawa University Graduate School of Medical Science, Japan

The grey shading on each data point correlates with the image quality, ranging from white (bad image quality) to black (excellent image quality).

1. Select the desired structure to be displayed – MRW or RNFLT 3.5, 4.1, or 4.7 mm.

2. Hover with the mouse over a data point, to display the examination date on the horizontal axis and the value for MRW or RNFL thickness in µm on the vertical axis.

3. Click a grey data point to display the corresponding IR image and OCT section image in the progression series.

4. **Regression Analysis:**
   - The average rate of change for the selected parameter **Slope of MRW** or **Slope of RNFLT** is displayed in µm per year.
   - A **p-value** of < 0.05 is statistically significant and (in the case of a negative declining slope) supports the hypothesis that a thickness decrease faster than normal aging is possibly being observed for the selected parameter (MRW/RNFLT).
   - A **p-value** of > 0.05 is statistically not significant and suggests that there may be no change in thickness of the selected parameter (MRW/RNFLT) outside of normal age decrease, or that the observed change in thickness is confounded or unreliable.
   - The blue regression line shows the linear approximation from the given data and a five-year trend.

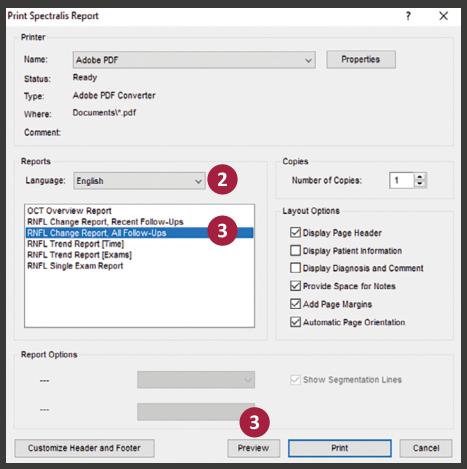
   Full regression analysis results are only displayed, if the progression series consists of five or more included examinations.

A small p-value does not automatically mean that there is clinically relevant change. A large p-value does not exclude the possibility that a clinically important change has occured.

5. Display progression information globally (G) and for each sector (T, TI, TS, N, NI, NS) by clicking on the sector buttons.

Follow-up Reports: GMPE

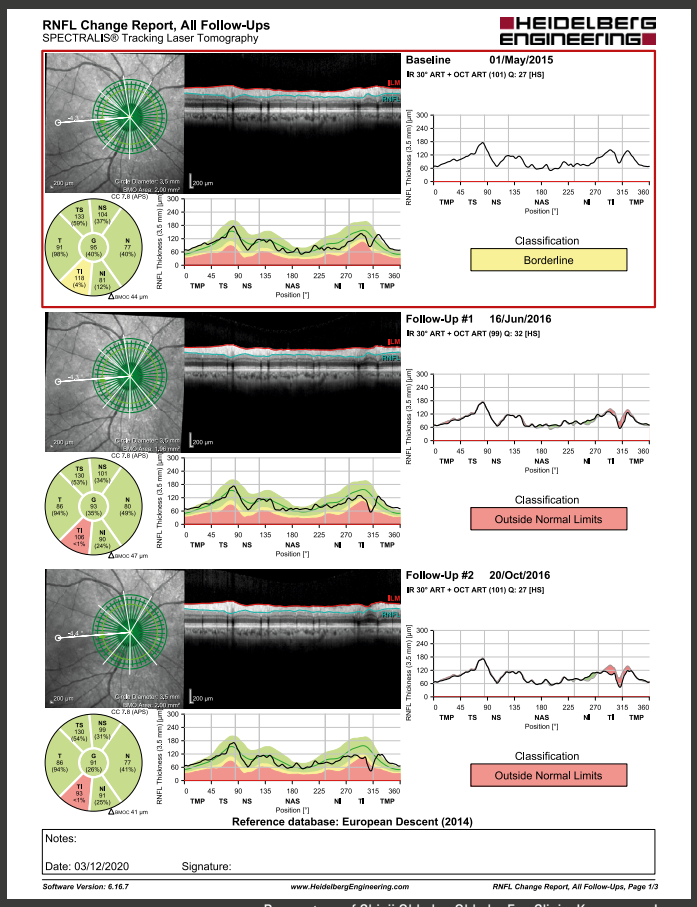
Printing Reports



1 Right-click on any image thumbnail and select **Print**.

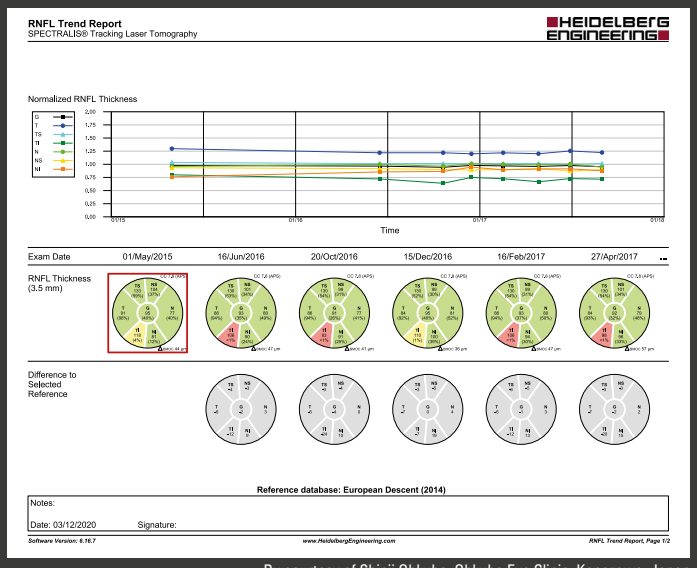
2 Choose language if necessary.

3 Select **RNFL Change Report, All Follow-Ups** to display all follow-up images in a progression series. Click **Preview** to view the report.



By courtesy of Shinji Ohkubo, Ohkubo Eye Clinic, Kanazawa, Japan and Kazuhisa Sugiyama, Kanazawa University Graduate School of Medical Science, Japan

4 Select **RNFL Trend Report [Time]** or **RNFL Trend Report [Exams]** to display the RNFL thickness classification, difference to the reference examination, and a trend diagram of RNFL thickness of each scan in a progression series.



By courtesy of Shinji Ohkubo, Ohkubo Eye Clinic, Kanazawa, Japan and Kazuhisa Sugiyama, Kanazawa University Graduate School of Medical Science, Japan

i Additional report options are available. Please refer to the SPECTRALIS user manual for comprehensive information.