

Contents

ACYCLE	- 1 -
WHAT THEY SAY	- 4 -
COPYRIGHT	- 6 -
1. ACKNOWLEDGMENTS.....	- 7 -
2. REFERENCES	- 8 -
3. SOFTWARE SPECIFICATIONS	- 10 -
3.1 SYSTEM REQUIREMENTS	- 10 -
3.2 DOWNLOADING THE <i>ACYCLE</i> SOFTWARE	- 11 -
3.3 MATLAB VERSION	- 12 -
3.3.1 <i>Toolboxes</i>.....	- 12 -
3.3.2 <i>Installation</i>	- 12 -
3.3.3 <i>Startup</i>	- 12 -
3.3.4 <i>Git Clone and Updating</i>	- 13 -
3.4 MAC VERSION	- 15 -
3.4.1 <i>Introduction</i>.....	- 15 -
3.4.2 <i>AcycleX.X-Mac-green</i>	- 15 -
3.5 WINDOWS VERSION.....	- 18 -
3.5.1 <i>Introduction</i>.....	- 18 -
3.5.2 <i>AcycleX.X-Win-Installer</i>	- 18 -
3.5.3 <i>AcycleX.X-Win-green</i>.....	- 18 -
3.6 DATA REQUIREMENTS	- 19 -
4. <i>ACYCLE</i> GRAPHICAL USER INTERFACE (GUI).....	- 20 -
4.1 FUNCTIONS AND GUI	- 20 -
4.2 FILE.....	- 21 -
4.3 EDIT	- 21 -
4.4 PLOT.....	- 22 -
4.5 BASIC SERIES.....	- 25 -
<i>Insolation</i>.....	- 25 -
<i>Astronomical Solution</i>	- 27 -
<i>Length-of-day & Day-of-year</i>	- 27 -
<i>Signal/Noise Generator</i>.....	- 28 -
<i>LR04 Stack</i>	- 30 -
<i>Examples</i>	- 30 -
4.6 MATH	- 35 -
<i>Sort/Unique/Delete-empty</i>.....	- 35 -
<i>Interpolation</i>.....	- 35 -
<i>Interpolation Series</i>.....	- 35 -
<i>Select Parts</i>	- 36 -
<i>Merge Series</i>.....	- 36 -
<i>Multiply Series</i>	- 36 -
<i>Add Gaps</i>	- 37 -

<i>Remove Parts</i>	- 37 -
<i>Remove Peaks</i>	- 37 -
<i>Clipping</i>	- 37 -
<i>Changepoint</i>	- 37 -
<i>Standardize</i>	- 38 -
<i>Principal Component</i>	- 38 -
<i>Log-transform</i>	- 38 -
<i>Derivative</i>	- 39 -
<i>Simple Function</i>	- 39 -
<i>Utilities</i>	- 39 -
<i>Find max/min</i>	- 39 -
<i>Image:</i>	- 39 -
<i>Show Image</i>	- 39 -
<i>RGB to Grayscale</i>	- 39 -
<i>Image Profile</i>	- 39 -
<i>Plot Digitizer</i>	- 40 -
4.7 TIME SERIES	- 42 -
<i>Detrending Curve Fitting</i>	- 42 -
<i>Smoothing</i>	- 43 -
<i>Moving Average</i>	- 43 -
<i>Moving Median</i>	- 43 -
<i>Bootstrap</i>	- 43 -
<i>Prewhitening</i>	- 44 -
<i>Spectral Analysis</i>	- 44 -
<i>Evolutionary Spectral Analysis</i>	- 47 -
<i>Wavelet transform</i>	- 48 -
<i>Coherence & Phase</i>	- 49 -
<i>Lead/Lag Relationship</i>	- 50 -
<i>Filtering</i>	- 51 -
<i>Dynamic Filtering</i>	- 53 -
<i>Amplitude Modulation</i>	- 55 -
<i>Build Age Model</i>	- 55 -
<i>Age Scale Tuning</i>	- 55 -
<i>Sedimentation Rate to Age Model</i>	- 59 -
<i>Power Decomposition Analysis</i>	- 59 -
<i>Sedimentary Noise Model</i>	- 60 -
<i>Correlation Coefficient (COCO/eCOCO)</i>	- 61 -
<i>TimeOpt</i>	- 66 -
<i>eTimeOpt</i>	- 67 -
<i>Spectral Moments</i>	- 68 -
4.8 HELP	- 71 -
<i>What's New</i>	- 71 -
<i>Manuals</i>	- 71 -
<i>Find Updates</i>	- 71 -
<i>Copyright</i>	- 71 -
<i>Contact</i>	- 71 -
4.9 MINI-ROBOT	- 72 -

5. DYNOT MODEL DESCRIPTION	- 73 -
5.1 DATA FORMAT	- 73 -
5.2 STARTUP	- 73 -
5.3 SETTINGS	- 74 -
5.4. RUNNING THE DYNOT MODEL	- 77 -
5.5. OUTPUT FILES	- 78 -
6. CASE STUDIES	- 79 -
TYPICAL PROCEDURES IN CYCLOSTRATIGRAPHY	- 79 -
EXAMPLE #1: INSOLATION	- 81 -
<i>Step 1: Load data.....</i>	<i>- 81 -</i>
<i>Step 2: Data pre-processing</i>	<i>- 82 -</i>
<i>Step 3: Detrending</i>	<i>- 82 -</i>
<i>Step 4: Power Spectral Analysis</i>	<i>- 83 -</i>
<i>Step 4: Evolutionary Spectral Analysis</i>	<i>- 84 -</i>
EXAMPLE #2: LA2004 ASTRONOMICAL SOLUTION (ETP)	- 86 -
<i>Step 1: Load data.....</i>	<i>- 86 -</i>
<i>Step 2: Data pre-processing</i>	<i>- 87 -</i>
<i>Step 3: Detrending</i>	<i>- 87 -</i>
<i>Step 4: Power Spectral Analysis</i>	<i>- 88 -</i>
<i>Step 5: Evolutionary Spectral Analysis</i>	<i>- 89 -</i>
<i>Step 6: Wavelet transform.....</i>	<i>- 90 -</i>
EXAMPLE #3: CARNIAN CYCLOSTRATIGRAPHY.....	- 92 -
<i>Step 1. Load Data</i>	<i>- 92 -</i>
<i>Step 2. Data Preparation.....</i>	<i>- 93 -</i>
<i>Step 3. Interpolation.....</i>	<i>- 93 -</i>
<i>Step 4. Detrending.....</i>	<i>- 95 -</i>
<i>Step 5. Power spectral analysis.....</i>	<i>- 96 -</i>
<i>Step 6. Evolutionary power spectral analysis</i>	<i>- 98 -</i>
<i>Step 7. Correlation coefficient</i>	<i>- 99 -</i>
<i>Step 8. Filtering.....</i>	<i>- 103 -</i>
<i>Step 9. Age model and tuning</i>	<i>- 104 -</i>
<i>Step 10. Repeat steps.</i>	<i>- 106 -</i>
REFERENCES	- 107 -