

Polly Default Settings for pollynet processing chain

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Description

Polly defaults are used for configuring the processing program, when the calibration procedure fails. At present stage, there are 3 calibration procedures which are essential for the program: lidar constants, depolarization calibration constant and water vapor calibration constant. Besides, the overlap file is also recommended to be attached to compare with the estimated overlap function through the signal ratio between Near-Range (NR) and Far-Range (FR) channels. In general, different polly systems have their own specific default settings because of their different functionalities. Old polly system has less channels, which in the end would require less calibration procedures and thus less default settings. The most advanced polly system, like the arielle, has been powered with 13 channels, namely $3\beta+2\alpha+2\delta+2FOV$, which needs more efforts for retrieving the products.

Polly Systems

The defaults for the operational polly systems were listed as below, which are highly dependent on their channels. Detailed information about the instrument can be found in [here](#).

Polly_1V2

settings	meaning	Data Type	example
depolCaliConst532	V* at 532. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V* at 532	float	0.0

settings	meaning	Data Type	example
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[16893959541573.252000, 1, 1, 1, 28466210203696.203000]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"polly_1v2__overlap_532.txt"
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0

PollyXT-DWD

settings	meaning	Data Type	example
depolCaliConst532	V* at 532. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443

settings	meaning	Data Type	example
depolCaliConstStd532	std of V* at 532	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[123459332446.982710, 1, 97878575429631.625000, 1, 1, 389530086877146.060000, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_dwd_overlap_532.txt"
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_dwd_overlap_355.txt"
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053

settings	meaning	Data Type	example
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0

PollyXT-LACROS

settings	meaning	Data Type	example
depolCaliConst532	V* at 532. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V* at 532	float	0.0
depolCaliConst355	V* at 355. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd355	std of V* at 355	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[42545559767070.414000, 1, 6.3e13, 1, 97878575429631.625000, 1, 2.2e14, 389530086877146.060000, 1, 1, 1, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_lacros_overlap_532.txt"

settings	meaning	Data Type	example
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_lacros_overlap_355.txt"
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0
molDepol355	molecule depolarization ratio at 355 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0239

settings	meaning	Data Type	example
molDepolStd355	std of molecule depolarization ratio at 355 nm.	float	0.0
wvconst	water vapor calibration constant [g*kg ⁻¹]. If the water vapor calibration cannot be done and there was no available calibration constant within 1 week, the default water vapor constant will be used.	float	15.0
wvconstStd	std of water vapor calibration constant [g*kg ⁻¹].	float	0.0

arielle

settings	meaning	Data Type	example
depolCaliConst532	V* at 532. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V* at 532	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels.	array	[123459332446.982710, 1, 97878575429631.625000, 1, 1, 389530086877146.060000, 1, 1]
depolCaliConst355	V* at 355. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd355	std of V* at 355	float	0.0

settings	meaning	Data Type	example
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[42545559767070.414000, 1, 6.3e13, 1, 97878575429631.625000, 1, 2.2e14, 389530086877146.060000, 1, 1, 1, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"arielle_overlap_532.txt"
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"arielle_overlap_355.txt"
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoritical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0

settings	meaning	Data Type	example
molDepol355	molecule depolarization ratio at 355 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0239
molDepolStd355	std of molecule depolarization ratio at 355 nm.	float	0.0
wvconst	water vapor calibration constant [g*kg ⁻¹]. If the water vapor calibration cannot be done and there was no available calibration constant within 1 week, the default water vapor constant will be used.	float	15.0
wvconstStd	std of water vapor calibration constant [g*kg ⁻¹].	float	0.0

PollyXT-UW

settings	meaning	Data Type	example
depolCaliConst532	V* at 532. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V* at 532	float	0.0
depolCaliConst355	V* at 355. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443

settings	meaning	Data Type	example
depolCaliConstStd355	std of V* at 355	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[42545559767070.414000, 1, 6.3e13, 1, 97878575429631.625000, 1, 2.2e14, 389530086877146.060000, 1, 1, 1, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_uw_overlap_532.txt"
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_uw_overlap_355.txt"
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053

settings	meaning	Data Type	example
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0
molDepol355	molecule depolarization ratio at 355 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0239
molDepolStd355	std of molecule depolarization ratio at 355 nm.	float	0.0
wvconst	water vapor calibration constant $[g \cdot kg^{-1}]$. If the water vapor calibration cannot be done and there was no available calibration constant within 1 week, the default water vapor constant will be used.	float	15.0
wvconstStd	std of water vapor calibration constant $[g \cdot kg^{-1}]$.	float	0.0

PollyXT-TROPOS

settings	meaning	Data Type	example
depolCaliConst532	V^* at 532. If depol calibration failed because of cloud contamination and there was no available V^* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V^* at 532	float	0.0

settings	meaning	Data Type	example
depolCaliConst355	V* at 355. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd355	std of V* at 355	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[42545559767070.414000, 1, 6.3e13, 1, 97878575429631.625000, 1, 2.2e14, 389530086877146.060000, 1, 1, 1, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_tropos_overlap_532.txt"
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_tropos_overlap_355.txt"

settings	meaning	Data Type	example
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0
molDepol355	molecule depolarization ratio at 355 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0239
molDepolStd355	std of molecule depolarization ratio at 355 nm.	float	0.0
wvconst	water vapor calibration constant [g*kg ⁻¹]. If the water vapor calibration cannot be done and there was no available calibration constant within 1 week, the default water vapor constant will be used.	float	15.0

settings	meaning	Data Type	example
wvconstStd	std of water vapor calibration constant [g*kg ⁻¹].	float	0.0

PollyXT-FMI

settings	meaning	Data Type	example
depolCaliConst532	V* at 532. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V* at 532	float	0.0
depolCaliConst355	V* at 355. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd355	std of V* at 355	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[42545559767070.414000, 1, 6.3e13, 1, 97878575429631.625000, 1, 2.2e14, 389530086877146.060000, 1, 1, 1, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_fmi_overlap_532.txt"

settings	meaning	Data Type	example
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_fmi_overlap_355.txt"
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0
molDepol355	molecule depolarization ratio at 355 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0239
molDepolStd355	std of molecule depolarization ratio at 355 nm.	float	0.0

settings	meaning	Data Type	example
wvconst	water vapor calibration constant [g*kg ⁻¹]. If the water vapor calibration cannot be done and there was no available calibration constant within 1 week, the default water vapor constant will be used.	float	15.0
wvconstStd	std of water vapor calibration constant [g*kg ⁻¹].	float	0.0

PollyXT-NOA

Attention: The setup has been upgraded from 2 near-range channels to 4 near-range channels at 2016.

settings	meaning	Data Type	example
depolCaliConst532	V* at 532. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V* at 532	float	0.0
depolCaliConst355	V* at 355. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd355	std of V* at 355	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[42545559767070.414000, 1, 6.3e13, 1, 97878575429631.625000, 1, 2.2e14, 389530086877146.060000, 1, 1, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]

settings	meaning	Data Type	example
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_noa_overlap_532.txt"
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_noa_overlap_355.txt"
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0

settings	meaning	Data Type	example
molDepol355	molecule depolarization ratio at 355 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0239
molDepolStd355	std of molecule depolarization ratio at 355 nm.	float	0.0
wvconst	water vapor calibration constant $[g \cdot kg^{-1}]$. If the water vapor calibration cannot be done and there was no available calibration constant within 1 week, the default water vapor constant will be used.	float	15.0
wvconstStd	std of water vapor calibration constant $[g \cdot kg^{-1}]$.	float	0.0

PollyXT-TJK

settings	meaning	Data Type	example
depolCaliConst532	V^* at 532. If depol calibration failed because of cloud contamination and there was no available V^* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd532	std of V^* at 532	float	0.0

settings	meaning	Data Type	example
depolCaliConst355	V* at 355. If depol calibration failed because of cloud contamination and there was no available V* within 1 week, the default value will be taken for depol caculations	float	0.024443
depolCaliConstStd355	std of V* at 355	float	0.0
LC	lidar constant. If lidar calibration failed and there was no available lidar constants within 1 week, the default values will be taken for calibrate the lidar signal. The order of this variable is the same like the order of the channels	array	[42545559767070.414000, 1, 6.3e13, 1, 97878575429631.625000, 1, 2.2e14, 389530086877146.060000, 1, 1, 1, 1, 1]
LCStd	std of the lidar constants	array	[0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
overlapFile532	overlap file for saving the overlap function of 532 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_tjk_overlap_532.txt"
overlapFile355	overlap file for saving the overlap function of 355 channel. This file can only have two columns: one is the height [m] and the other is the overlap function. There should be 1 header to describe the variables. An exemplified one can be found in the folder of '/lib/pollyDefaults/'	string	"pollyxt_tjk_overlap_355.txt"

settings	meaning	Data Type	example
molDepol532	molecule depolarization ratio at 532 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0053
molDepolStd532	std of molecule depolarization ratio at 532 nm.	float	0.0
molDepol355	molecule depolarization ratio at 355 nm. In theory, this value can be calculated based on the filter bandwidth and central wavelength. But due to some system effects from retardation, diattenuation and depolarization, the theoretical value always deviate with the measured molecular background volume depolarization ratio. And this will introduce large error for calculating the particle depolarization ratio of weak aerosol layers. Therefore, we setup this default to cancel out some part of the influences	float	0.0239
molDepolStd355	std of molecule depolarization ratio at 355 nm.	float	0.0
wvconst	water vapor calibration constant [g*kg ⁻¹]. If the water vapor calibration cannot be done and there was no available calibration constant within 1 week, the default water vapor constant will be used.	float	15.0
wvconstStd	std of water vapor calibration constant [g*kg ⁻¹].	float	0.0