Implementation of IFS cycle 46r1

#IFS46r1 #newfcsystem

Description of the upgrade

IFS Cycle 46r1 is an upgrade with many scientific contributions, including changes in data assimilation (both in the EDA and the 4DVAR), in the use of observations, and in modelling. The new cycle only includes meteorological changes; there are no technical changes, e.g. new resolutions.

⚠ Implemented: 06 UTC run 11 Jun 2019

News

13 Jun 2019

- We are pleased to inform our users that the **two issues reported yesterday (see below) are fixed**, starting with the run of 13 Jun 2019 at 12 UTC.

12 Jun 2019

- **We have been informed about an issue with two wave output parameters,** "mean wave period based on first moment for wind waves" (shortName=p1ww, paramId=140223) and "mean wave period based on second moment for wind waves" (shortName=p2ww, paramId=140224). The data values are wrong. We are working on a fix which will be implemented soon.
- **Please note that in isolated grid points, the 2m temperature (shortName=2t, paramId=167) is lower than those of surrounding grid points**. This is linked to the 2m temperature computation in cases when the surface is wet due to rain or dew, or if there is a lake in the gridbox. Other model fields, including the skin temperature and the lowest model fields are unaffected. We are currently testing a correction and will implement it soon.
- We are happy to inform our users that the implementation of the new IFS cycle happened successfully, starting with the 06 UTC run of the Boundary Conditions Optional Programme on 11 Jun 2019 . See News release.
- We have re-opened the dissemination requirements interface on 12 Jun 2019 at 08:00 UTC.
- Users can request the new model output parameters listed below from the dissemination system.
- We would like to thank all our users for their testing the new IFS Cycle 46r1 data and products during the release candidate phase.
- Please do not hesitate to contact our Service Desk if you experience any problem after the implementation of the new IFS Cycle 46r1.

06 Jun 2019

- We inform our users of the dissemination system that we will freeze the requirements interface on Monday 10 Jun 2019 at 09:30 UTC for 2 days, in preparation of the implementation of the new IFS Cycle 46r1. No requirements changes will be allowed during this period. We apologise for any inconvenience caused.

Contents of this page

Related links

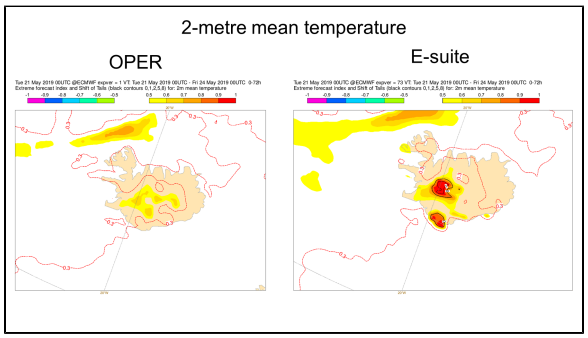
- News article
- Forecast scorecards
- Forecast User Guide
- Detailed IFS documentation

04 Jun 2019

- The problem with the "Maximum cape shear in the last 6 hours" reported on 17 May 2019 has been fixed from the HRES and ENS runs of 30 May 2019 at 00Z.
- A fix has been applied to overcome the strange 2m temperature behaviour in the model climate close to glaciers and ice sheets reported on 30 May 2019 . We have rerun the 6 re-forecast sets produced between 27 May 2019 and 13 Jun 2019 and the corresponding data have been re-archived in MARS. The new extended range 2m temperature EFI products are now fixed, as they use a climate based on 3 re-forecast sets. The medium range 2m temperature EFI will be completely fixed once the 9 re-forecast sets they use no longer include any erroneous sets. This will happen prior to implementation of the new IFS cycle 46r1.
- May we remind our users to download the Cycle 46r1 expver 0073 re-forecasts that they need for their operational activities after the implementation of the new cycle **from the ECPDS test system**. The re-forecasts from 27 May 2019 to 06 Jun 2019 will remain available for 4 weeks and the ones for 10 Jun 2019 and 13 Jun 2019 will respectively be made available on 06 Jun 2019 and on 10 Jun 2019.

30 May 2019

- Due to a technical error, the events probabilities for tropical storms, depressions and hurricanes (GRIB parameters 131089, 131090 and 131091 - shortNames pts, ph and ptd) have been encoded and archived at a lower resolution, N320 instead of O640, in Cycle 46r1. The data values were correct. We have fixed this issue as of the run of 21 May 2019 at 12UTC.
- **The cause of strange 2m temperature behaviour in the model climate close to glaciers and ice sheets, which in turn affects EFI and SOT fields as illustrated below, has been diagnosed** and we are now working to rectify this. We may choose to re-run the Cycle 46r1 re-forecast(s) for some dates. We will confirm this as soon as we have further details.



Medium-range EFI, 2-metre mean temperature, Cycle 45r1 (OPER) and Cycle 46r1 (E-suite).

17 May 2019

- The IFS cycle 46r1 scorecards are now available.
- Cycle 46r1 test data are available in ecCharts and as ENS meteograms.
- Recording and slides of second cycle 46r1 webinar are available.
- The implementation of the new cycle is confirmed for Tuesday 11 Jun 2019. The first operational run using the new cycle will be the 06 UTC analysis and forecast in the Boundary Conditions Optional Programme on 11 Jun 2019 followed by the 12 UTC main assimilation and forecast. The monthly forecast extension to the ensemble will be run with the new IFS cycle for the first time the following Thursday 13 Jun 2019.
- **We have identified a problem with the parameter "Maximum CAPES in the last 6 hours" (param=228036, shortName=mxcapes6) in Cycle 46r1, affecting the data archived in MARS and available through the dissemination, for HRES, ENS and ENS extended. We are working on a fix for this parameter.**

15 May 2019

- We have now reached the release candidate phase of the implementation of the new IFS Cycle 46r1.
- IFS cycle 46r1 test data is available in dissemination.
- Changes in some Cycle 46r1 data are highlighted.

05 Apr 2019

- The expected date for the operational implementation of IFS cycle 46r1 is 11 Jun 2019. We will confirm this date early in May.
- The second set of live-streamed seminars for cycle 46r1 will take place on 15 May 2019 at 09:30 BST and on 16 May 2019 at 17:00 BST.

28 Mar 2019

- The IFS Cycle 46r1 test data is available in MARS including new model output parameters.

All IFS cycles

- Terminology for IFS testing
- Implementation of IFS Cycle 48r1
- Implementation of IFS Cycle 47r3
- Implementation of IFS Cycle 47r2
- Implementation of IFS Cycle 47r1
- Implementation of IFS cycle 46r1
- Implementation of IFS cycle 45r1
- Implementation of Seasonal Forecast SEAS5
- Implementation of IFS cycle 43r3
- Implementation of IFS Cycle 43r1
- Implementation of IFS cycle 41r2
- Introducing the octahedral reduced Gaussian grid
- Horizontal resolution increase
- Boundary-Condition Programme ENS at 06 and 18 UTC
- Implementation of IFS Cycle 41r1
- IFS cycle upgrades pre 2015

Timeline of the implementation

The planned timetable for the implementation of the cycle ***46r1*** is as follows:

Date	Event
January 2019	Initial announcement
26 February and 07 March 2019	Live-streamed seminar 1
15 May 2019	Availability of test data in dissemination
15 May and 16 May 2019	Live-streamed seminar 2
11 June 2019	Expected date of implementation

The timetable represents current expectations and may change in light of actual progress made.

Datasets affected

- HRES
- ENS
- HRES-WAM
- HRES-SAW
- ENS-WAM
- ENS-extended

Resolution

Unchanged from previous IFS cycle.

	Component	Horizontal resolution		Vertical resolution [levels]
Atmosphere	HRES	O1280	~9 km	137
	ENS	O640	~18 km	91
	ENS extended	O320	~36 km	91
Wave	HRES-WAM	0.125°	~14 km	-
	ENS-WAM	0.25°	~28 km	-
	ENS-WAM Extended	0.5°	~55 km	-
Ocean	NEMO 3.4	0.25°	~28 km	75

Meteorological content

Assimilation

- Continuous data assimilation. Number of 4D-Var outer loops increased from 3 to 4. Early delivery assimilation window length increased from 6 to 8 hours. Observation cut off time extended.
- Ensemble of Data Assimilations (EDA) increased from 25 members to 50 members.
- Use of the EDA spread to compute the Simplified Extended Kalman Filter (SEKF) soil analysis Jacobians.
- Weakly coupled data assimilation introduced for sea-surface temperature in the tropics only.
- Consistent spatial interpolation of the model to observation locations in trajectories and minimisations. Interpolation in nonlinear trajectories changed from bicubic to bilinear interpolation.
- RTTOV upgraded from v12.1 to v12.2.

Observations

- Assimilation of SMOS neural network soil moisture product.
- Assimilation of SSMIS-F17 150h GHz and GMI 166 v/h GHz.
- Improved use of land sea mask in the field of view for microwave imagers.

- Introduction of interchannel observation error correlations for ATMS.
- Introduction of interchannel observation error correlations for geostationary water vapour channels.
- Slant path calculations for geostationary radiances.
- Extend usage of geostationary radiances to higher zenith angles.
- Consistent infrared aerosol detection

For further details, read Main Contributions in data assimilation and observations.

Model

- Improvements in convection scheme (entrainment, CAPE closure, shallow convection).
- Activate LW scattering in radiation scheme.
- 3D aerosol climatology replaces 2D climatology.
- Correct scaling of dry mass flux in diffusion scheme.
- Improvement of the TL/AD of the semi-Lagrangian departure point scheme in the polar cap area.
- Fix instability in 2m temperature diagnostic related to wet tile.
- Bug fix in the computation of rain amount that could freeze when intercepted by the snow-pack.
- New parametrisations for wind input and deep water dissipation for the wave model.
- Limit on wave spectrum for very shallow water and minimum depth set to 3m.
- ENS makes use of 50 EDA-members and initial perturbations are made exchangeable.
- ENS radiation time-step is reduced from 3 hours to 1 hour, to be consistent with HRES.

For further details, read Main Contributions in modelling.

Meteorological impact

The following evaluation of the new cycle is based on the alpha and beta testing of the new Cycle.

Weather parameters and waves

The IFS Cycle 46r1 brings substantial improvements in forecast skill both for the ENS and the HRES. Medium-range forecast errors in the extra-tropics are reduced by 1-5% for upper-air and by 0.5-2% for surface parameters. Improvements of this magnitude are seen both against analysis and against observations. In terms of lead time, upper-air improvements amount to a gain of the order of 2-3 hours. In the tropics, HRES results are predominantly positive, but there are some increases in temperature and humidity errors, mainly seen in verification against analysis. For temperature, they are due to changes in the analysis and the introduction of a 3D aerosol climatology. ENS results in the tropics are also mixed, in addition to the already mentioned changes they are affected by a minor reduction in spread on the order of 1% due to changes in the deep convection scheme. Wave parameters (significant wave height and mean wave period) in the HRES are improved by 5-10% due to a major upgrade in the ocean wave model. Increased wave activity leads to some degradation in wave height at longer lead times in the ENS.

Precipitation forecast skill increases in the extra-tropics by about 0.5% in the ENS and 1% in the HRES. Other weather parameters, such as 2m temperature and 2m dewpoint, 10m wind speed, and total cloud cover improve by about 1% in the ENS, and by 0.5-1% in the HRES when verified against observations. In the tropics, slightly reduced spread and increased bias lead to a very small (0.1-0.2%) degradation in ENS precipitation. Scores in the tropics show strong improvements for 2m temperature (4-8% against analyses both in ENS and HRES), (1-2% against obs in ENS).

Tropical cyclones

Results for TCs are generally neutral. There is a slight improvement in the tracks consistent with improvements in tropical winds, but this signal has only marginal statistical significance.

Extended range

The extended-range impact of model changes associated with 46r1 is neutral, except for a small degradation of 2-metre temperature and precipitation skill scores in the tropics. However, the use of ERA5 instead of ERA-Interim as initial condition gives significant improvements in weeks 1-2 in the extratropics, and up to week 4 in the tropics.

Evaluation

Scorecards presenting the new cycle performance are regularly updated:

- IFS Cycle 46r scorecards

Re-forecasts

The new IFS cycle 46r1 will use the ERA5 data to initialize the re-forecasts and also use ERA5 EDA to perturb the re-forecasts initial conditions.

New and changed parameters

New model output parameters

Extended output have been added in cycle 46r1, including a subset of ocean fields on the atmospheric grid.

paramId	shortName	name	Description	units	GRIB edition	Components	Test data available	Dissemination	ecCharts	Added to the Catalogue
Near-surface wind output										
228239	200u	200 metre U wind component	eastward component of the 200m wind.	m s^{-1}	1	HRES / ENS	✓	✓	✗	✓
228240	200v	200 metre V wind component	northward component of the 200m wind.	m s^{-1}	1	HRES / ENS	✓	✓	✗	✓
Wave model parameters										
140098	weta	Wave induced mean sea level correction	Wave induced mean sea level correction	m	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓
140099	wraf	Ratio of wave angular and frequency width	Ratio of wave angular and frequency width	dimensionless	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓
140100	wnslc	Number of events in freak waves statistics	Number of events in freak waves statistics	dimensionless	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓
140101	utaua	U-component of atmospheric surface momentum flux	U-component of atmospheric surface momentum flux	N m^{-2}	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓
140102	vtaua	V-component of atmospheric surface momentum flux	V-component of atmospheric surface momentum flux	N m^{-2}	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓
140103	utauo	U-component of surface momentum flux into ocean	U-component of surface momentum flux into ocean	N m^{-2}	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓
140104	vtauo	V-component of surface momentum flux into ocean	V-component of surface momentum flux into ocean	N m^{-2}	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓

140105	wphio	Wave turbulent energy flux into ocean	Wave turbulent energy flux into ocean	W m^{-2}	1	HRES-WAM / HRES-SAW / ENS-WAM	✓	✓	✗	✓
Ocean parameters available at the surface, produced by the NEMO model - see also here										
174098	sithick	Sea-ice thickness *	Sea-ice thickness	m	1	HRES / ENS	✓	✓	✗	✓
151148	mld	Mixed layer depth *	Mixed layer depth	m	1	HRES / ENS	✓	✓	✗	✓
151145	zos	Sea surface height *	Sea surface height	m	1	HRES / ENS	✓	✓	✗	✓
151163	t20d	Depth of 20C isotherm *	Depth of 20C isotherm	m	1	HRES / ENS	✓	✓	✗	✓
151130	so	Sea water practical salinity *	Sea water practical salinity	psu	1	HRES / ENS	✓	✓	✗	✓
151164	tav300	Average potential temperature in the upper 300m *	Average potential temperature in the upper 300m	degrees C	1	HRES / ENS	✓	✓	✗	✓
151175	sav300	Average salinity in the upper 300m *	Average salinity in the upper 300m	psu	1	HRES / ENS	✓	✓	✗	✓
* All fields are masked on land and lake points. tav300 and sav300 are masked on ocean points with depth < 300m.										
Parameters on Potential Vorticity levels (1.5 and 2 PVU) - see also here										
129	z	Geopotential	This parameter is the gravitational potential energy of a unit mass, at a particular location, relative to mean sea level.	m^2 s^{-2}	1	HRES / ENS *	✓	✓	✗	✓
203	o3	Ozone mass mixing ratio	This parameter is the mass of ozone per kilogram of air.	kg kg^{-1}	1	HRES / ENS *	✓	✓	✗	✓
3	pt	Potential Temperature	Potential Temperature	K	1	HRES / ENS *	✓	✓	✗	✓
54	pres	Pressure	Pressure	Pa	1	HRES / ENS *	✓	✓	✗	✓
133	q	Specific humidity	This parameter is the mass of water vapour per kilogram of moist air.	kg kg^{-1}	1	HRES / ENS *	✓	✓	✗	✓
131	u	U component of wind	This parameter is the eastward component of the wind. It is the horizontal speed of air moving towards the east, in metres per second. A negative sign thus indicates air movement towards the west.	m s^{-1}	1	HRES / ENS *	✓	✓	✗	✓

132	v	V component of wind	This parameter is the northward component of the wind. It is the horizontal speed of air moving towards the north, in metres per second. A negative sign thus indicates air movement towards the south.	m s^{-1}	1	HRES / ENS *	✓	✓	✗	✓
* The perturbed forecasts for the ENS only contain the parameters pt, u and v.										
Ensemble probabilities										
131098	tpg25	Total precipitation of at least 25 mm	Total precipitation of at least 25 mm (24h periods; T+0-24,12-36,...,334-360)	%	2	ENS	✓	✓	✓	✓
131099	tpg50	Total precipitation of at least 50 mm	Total precipitation of at least 50 mm (24h periods; T+0-24,12-36,...,334-360)	%	2	ENS	✓	✓	✓	✓
131085	tpg100	Total precipitation of at least 100 mm	Total precipitation of at least 100 mm (24h periods; T+0-24,12-36,..., 334-360)	%	2	ENS	✓	✓	✓	✓
131100	10fgg10	10 metre wind gust of at least 10 m/s	10 metre wind gust of at least 10 m/s (Maximum within a 24h period; T+0-24,12-36,..., 334-360)	%	2	ENS	✓	✓	✓	✓
133093	ptsa_gt_1stdev	Probability of 850hPa temperature standardized anomaly greater than 1 standard deviation	Probability of temperature anomaly greater than 1 standard deviation of the climatology.	%	2	ENS	✓	✓	✗	✓
133094	ptsa_gt_1p5stdev	Probability of 850hPa temperature standardized anomaly greater than 1.5 standard deviation	Probability of temperature anomaly greater than 1.5 standard deviation of the climatology. See also here.	%	2	ENS	✓	✓	✗	✓
133095	ptsa_gt_2stdev	Probability of 850hPa temperature standardized anomaly greater than 2 standard deviation	Probability of temperature anomaly greater than 2 standard deviation of the climatology. See also here.	%	2	ENS	✓	✓	✗	✓

133096	ptsa_lt_1stdev	Probability of 850hPa temperature standardized anomaly less than -1 standard deviation	Probability of temperature anomaly less than -1 standard deviation of the climatology. See also here.	%	2	ENS	✓	✓	✗	✓
133097	ptsa_lt_1p5stdev	Probability of 850hPa temperature standardized anomaly less than -1.5 standard deviation	Probability of temperature anomaly less than -1.5 standard deviation of the climatology. See also here.	%	2	ENS	✓	✓	✗	✓
133098	ptsa_lt_2stdev	Probability of 850hPa temperature standardized anomaly less than -2 standard deviation	Probability of temperature anomaly less than -2 standard deviation of the climatology. See also here.	%	2	ENS	✓	✓	✗	✓
Ensemble mean / Ensemble standard deviation										
10	ws *	The speed of horizontal air movement in metres per second.	The speed of horizontal air movement in metres per second.	$m\ s^{-1}$	1	ENS	✓	✓	✗	✓
130	t *	This parameter is the temperature in the atmosphere.	This parameter is the temperature in the atmosphere.	K	1	ENS	✓	✓	✗	✓
* These parameters have been added at 250 hPa.										
Extreme Forecast Index (EFI) & Shift Of Tails (SOT)										
132045	wvfi	Water vapour flux index	EFI and SOT for water vapour flux. See also here.	(-1 to 1)	1	ENS	✓	✓	✗	✓
132167	2ti	2 metre temperature index	EFI and SOT for weekly mean temperature (out to week 6). See also here.	(-1 to 1)	1	ENS-EXTENDED	✓	✓	✓	✓
132228	tpi	Total precipitation index	EFI and SOT for 1 week total precipitation (out to week 6). See also here.	(-1 to 1)	1ww	ENS-EXTENDED	✓	✓	✓	✓

Changes to existing parameters

EFI/SOT in the extended-range

With Cycle 46r1, the EFI and SOT become available in the extended-range forecast for two parameters: 7-day mean of 2m temperature and 7-day total precipitation. In contrast to the medium range, the model climate is derived from a set of 3 (rather than 9) re-forecast run dates, centred on the date of the real-time forecast initialisation (all are from 00UTC). The climate sample size is therefore much smaller and comprises 660 values compared to 1980 used in the medium range, but this does make the EFI and SOT consistent with other climate-related products from the extended-range forecasts, such as anomalies and probabilities. See also here.

New climatology for 850hPa Temperature anomaly probabilities

The outdated fixed climatology for computing historical 850hPa temperature anomaly probability parameters 131020 (talm2), 131021 (tag2), 131022 (talm8), 131023 (talm4), 131024 (tag4) and 131025 (tag8) is replaced by a new re-forecast-based climatology. The same climatology is also used to compute the Cycle 46r1 new (standard-deviation-related) 850hPa temperature anomaly probability parameters listed above. The new climatology is much more compatible with the real-time forecast. See also here.

A change to the computation of maximum CAPE and maximum CAPE-shear parameters

The two parameters 228035 (mxcape6) and 228036 (mxcapes6) namely “maximum CAPE in the last 6 hours” and “maximum CAPE-shear in the last 6 hours” respectively implemented with cycle 45r1, were co mputed in a complex way by combining hourly output of the model’s instantaneous CAPE (paramID=59) and CAPE-shear (paramID=228044) with a different type of CAPE, based on virtual temperature, that is used more directly by the model parametrisation where convection is active. This way of computing mxcape6 and mxcapes6 is inconsistent with the standard, instantaneous CAPE and CAPE-shear output fields provided by ECMWF hitherto. So to achieve more consistency, from cycle 46r1 we will change the mxcape6 and mxcapes6 variables to be based solely on the standard instantaneous hourly values of CAPE and CAPE-shear.

Technical content

Changes to GRIB encoding

Model identifiers

The GRIB model identifiers (generating process identification number) for cycle 46r1 will be changed as follows:

GRIB 1 Section 1 Octets	GRIB 2 Section 4 Octets	eccodes key	Component	Model ID	
				Old	New
6	14	generatingProcessIdentifier	Atmospheric model	149	**150**
			Ocean wave model	114	**115**
			HRES-SAW (HRES stand alone ocean wave model)	214	**215**

Sea Surface Temperature

With the new IFS cycle 46r1, the ecCodes key "localDefinitionNumber" for the Sea Surface Temperature (SST) analyses at 00Z and 12Z will be changed from 17 to 1, both in dissemination and in MARS. With this change, all SST and Sea Ice fields for the analyses and Forecasts will be harmonised.

Software

ecCodes

ecCodes version 2.12.5 provides full support for the new model output parameters introduced in IFS Cycle 46r1.

Magics

Magics version 4.0.3 provides full support for the new model output parameters introduced in IFS Cycle 46r1.

Metview

Metview version 5.5.3 provides full support for the new model output parameters introduced in IFS Cycle 46r1.

ECMWF updated its software packages to the above listed versions on 05 Jun 2019

Availability of test data from the IFS cycle 46R1 test suites

Test data in MARS

Test data from the IFS Cycle 46r1 test suites are available in MARS. The data are available with E-suite experiment version (expver) 0073 (MARS keyword EXPVER=0073) starting from 00 UTC on 29 January 2019.

The data can be accessed in MARS from:

- HRES (class=od, stream=oper, expver=73)
- Wave HRES (class=od, stream=wave, expver=73)
- ENS (class=od, stream=enfo, expver=73)
- ENS Wave (class=od, stream=waef, expver=73)

Only registered users of ECMWF computing systems will be able to access the test data sets in MARS.

We recommend users to use the MARS keyword "PARAMETER=paramId", as the shorName or full name may be ambiguous. E.g. for the new Wave model output, use "PARAMETER=140098" and not "PARAMETER=weta" or **"PARAMETER=Wave induced mean sea level correction".**

The data should not be used for operational forecasting. Please report any problems you find with this data to Service Desk.

Test data in dissemination

IFS Cycle 46r1 test data from the release candidate testing stage are available through the test dissemination system, starting from the 12Z run on 14 May 2019. Users of ECMWF dissemination products can trigger transmission of test products by logging in to the test ECPDS system at https://ecpds-xmonitor.ecmwf.int/ (or https://msaccess.ecmwf.int:7443) in the usual manner. In order to receive the test products, users have to have their firewall open to the relevant ECPDS Data Movers:

- Internet transfers: 193.61.196.104 (ecpds-xma.ecmwf.int), 193.61.196.105 (ecpds-xmb.ecmwf.int) and 193.61.196.113 (ecpds-xmc.ecmwf.int)
- RMDCN transfers: 136.156.8.132 (mspds-dm4.ecmwf.int) and 136.156.8.133 (mspds-dm5.ecmwf.int)

The IFS Cycle 46r1 test products are available as version number 73 (file names ending with '73'). The test products are generated shortly behind real-time and based on the operational dissemination requirements and the IFS Cycle 46r1 test data for HRES, HRES-WAM, HRES-SAW., ENS, ENS-WAM and ENS extended.

The Cycle 46r1 new parameters listed above will become available in dissemination after the implementation of the cycle.

Should you require any assistance with IFS Cycle 46r1 test dissemination products, please contact Data Services.

Graphical display of IFS cycle 46r1 test data using ecCharts

From the run of 16 May at 00Z onwards, the IFS cycle 46r1 layers are available in ecCharts. Cycle 46r1 layers are identified by the label "0073" in their title.

Web charts based on IFS cycle 46r1 test data

ENS meteograms based on IFS cycle 46r1 test data are available and can be viewed by selecting the "IFS cycle 46r1' model run in the ENS meteograms interface. Access to remaining web charts in the Charts Catalogue will be available shortly.

Time-critical applications

Option 1 - simple time-critical jobs

Member State users of the "Simple time-critical jobs" framework can test that their scripts will work with the IFS Cycle 46r1 test data by using the limited ECaccess 'events' set up for this purpose:

1633	e_ms090	At this stage, the e-suite step 090 (HRES-BC) has been generated.
1634	e_ms144	At this stage, the e-suite step 144 (ENS-BC) has been generated.
1635	e_ms240	At this stage, the e-suite step 240 (HRES) has been generated.
1636	e_ms360	At this stage, the e-suite step 360 (ENS) has been generated.
1637	e_mslaw	At this stage, the e-suite step law (HRES-SAW) has been generated.
1638	e_ms1104	At this stage, the e-suite step 1104 (ENS extended) has been generated.
1639	e_msrefc	At this stage, the e-suite step refc (REFORECAST) has been updated.

For these events, MSJ_EXPVER environment variable is set to 0073 and can be used to specify the IFS Cycle 46r1 test data in any MARS retrievals.

These events are intended for testing technical aspects only and should **not** be used for Time Critical activities.

Options 2 and 3

Option 2 or 3 time-critical applications can be tested with the IFS Cycle 45r1 test data retrieved from MARS or received in Dissemination.

Resources

- *T. Haiden; M. Janousek; F. Vitart; L. Ferranti; F. Prates:* "Evaluation of ECMWF forecasts, including the 2019 upgrade. Available at https://www.ecmwf.int/en/elibrary/19277-evaluation-ecmwf-forecasts-including-2019-upgrade
- Peter Lean, Massimo Bonavita, Elías Hólm, Niels Bormann,Tony McNally: "Continuous data assimilation for the IFS" - ECMWF Newsletter 158. Available at https://www.ecmwf.int/en/newsletter/158/meteorology/continuous-data-assimilation-ifs
- Simon Lang, Elías Hólm, Massimo Bonavita, Yannick Trémolet (JCSDA, US): "A 50-member Ensemble of Data Assimilations" - ECMWF Newsletter 158. Available at https://www.ecmwf.int/en/newsletter/158/meteorology/50-member-ensemble-data-assimilations
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Document versions

Date	Reason for update
Date	**Reason for update**
22 Jan 2019	Initial version
28 Mar 2019	• test data in MARS • recording and presentation slides for fist seminar • further reading
05 Apr 2019	• expected date for implementation announced • announcement of dates for second live-streamed seminar.
15 May 2019	• Test data in dissemination • Meteorological impact of the new cycle • technical change to Sea Surface Temperature. • Changes in Cycle 46r1 data.

17 May 2019	• Scorecards availableww • Data available in ecCharts and in ENS meteograms • Issue with parameter mxcapes6
30 May 2019	• technical fix to storm ENS GRIB data • Issue in 2T Model Climate affecting EFI/SOT • Links added to further information on some new /changed parameters.
04 Jun 2019	• Issue with parameter mxcapes6 fixed • Issue in 2T Model Climate affecting EFI/SOT fixed • Re-run of the 6 re-forecasts between 27 May 2019 and 13 Jun 2019
06 Jun 2019	• No changes to dissemination requirements allowed between 10 Jun 2019 and 12 Jun 2019
12 Jun 2019	• Successful implementation of IFS Cycle 46r1 • Dissemination requirements interface re-opened • New model output parameters available on request through dissemination • Issue with 2m temperature • Issue with 2 wave parameters, p1ww and p2ww
13 Jun 2019	• Issues with 2t, p1ww and p2ww fixed