

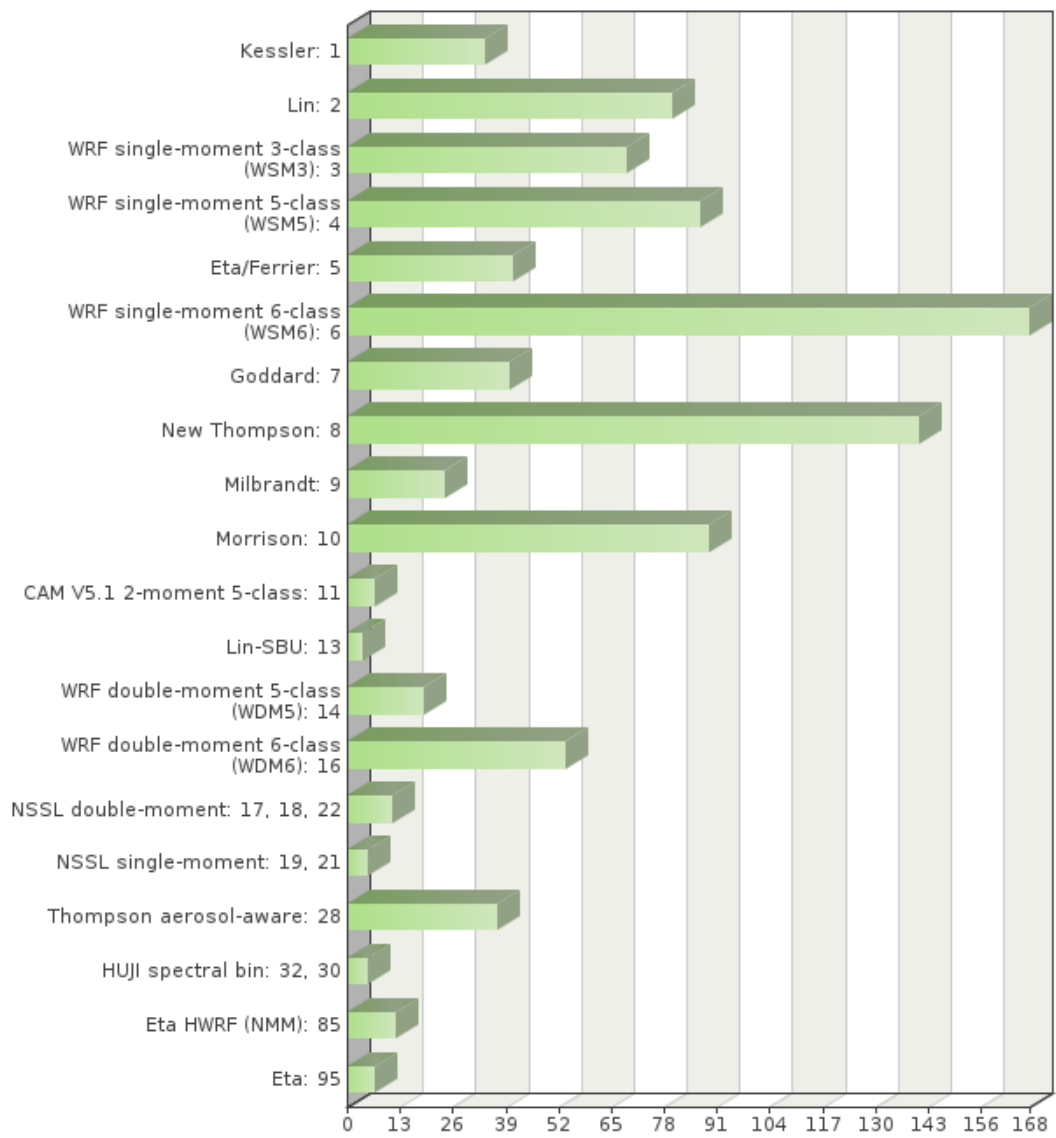
WRF Physics Use Survey- August 2015

This survey was sent WRF users asking them to indicate the schemes/packages for different physics areas that they used most frequently. The following is a summary of the results.

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Question 1

Microphysics (mp_physics)



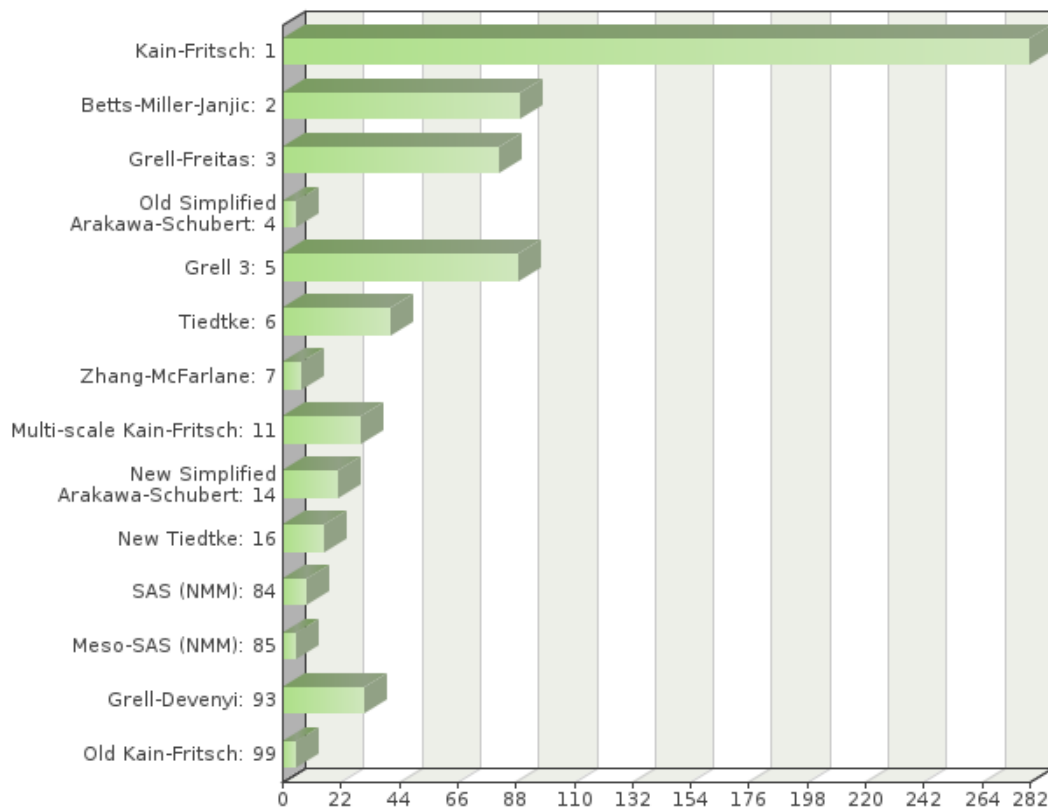
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
Kessler: 1	34	3.64%	9.24%
Lin: 2	80	8.57%	21.74%
WRF single-moment 3-class (WSM3): 3	69	7.39%	18.75%
WRF single-moment 5-class (WSM5): 4	87	9.31%	23.64%
Eta/Ferrier: 5	41	4.39%	11.14%
WRF single-moment 6-class (WSM6): 6	168	17.99%	45.65%
Goddard: 7	40	4.28%	10.87%
New Thompson: 8	141	15.1%	38.32%
Milbrandt: 9	24	2.57%	6.52%
Morrison: 10	89	9.53%	24.18%
CAM V5.1 2-moment 5-class: 11	7	0.75%	1.9%
Lin-SBU: 13	4	0.43%	1.09%
WRF double-moment 5-class (WDM5): 14	19	2.03%	5.16%
WRF double-moment 6-class (WDM6): 16	54	5.78%	14.67%
NSSL double-moment: 17, 18, 22	11	1.18%	2.99%
NSSL single-moment: 19, 21	5	0.54%	1.36%
Thompson aerosol-aware: 28	37	3.96%	10.05%
HUJI spectral bin: 32, 30	5	0.54%	1.36%
Eta HWRF (NMM): 85	12	1.28%	3.26%
Eta: 95	7	0.75%	1.9%
Sum:	934	100%	100%

Total answered: 368

Question 2

Cumulus (cu_physics)



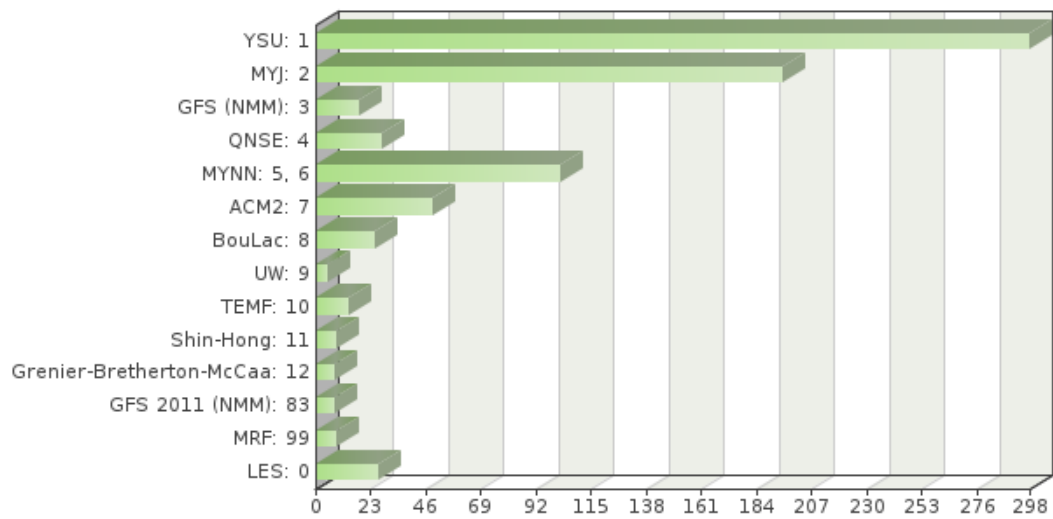
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
Kain-Fritsch: 1	282	39.55%	80.11%
Betts-Miller-Janjic: 2	90	12.62%	25.57%
Grell-Freitas: 3	82	11.5%	23.3%
Old Simplified Arakawa-Schubert: 4	5	0.7%	1.42%
Grell 3: 5	89	12.48%	25.28%
Tiedtke: 6	41	5.75%	11.65%
Zhang-McFarlane: 7	7	0.98%	1.99%
Multi-scale Kain-Fritsch: 11	30	4.21%	8.52%
New Simplified Arakawa-Schubert: 14	21	2.95%	5.97%
New Tiedtke: 16	16	2.24%	4.55%
SAS (NMM): 84	9	1.26%	2.56%
Meso-SAS (NMM): 85	5	0.7%	1.42%
Grell-Devenyi: 93	31	4.35%	8.81%
Old Kain-Fritsch: 99	5	0.7%	1.42%
Sum:	713	100%	100%

Total answered: 352

Question 3

PBL (bl_pbl_physics)



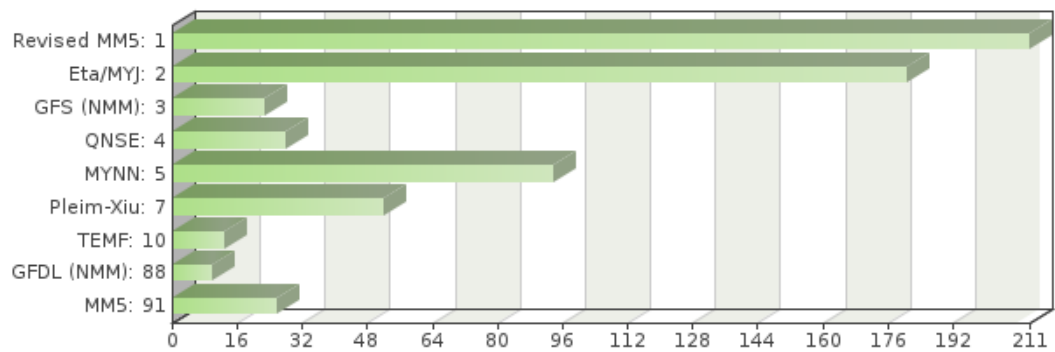
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
YSU: 1	298	37.53%	81.42%
MYJ: 2	195	24.56%	53.28%
GFS (NMM): 3	18	2.27%	4.92%
QNSE: 4	28	3.53%	7.65%
MYNN: 5, 6	102	12.85%	27.87%
ACM2: 7	49	6.17%	13.39%
BouLac: 8	25	3.15%	6.83%
UW: 9	5	0.63%	1.37%
TEMF: 10	14	1.76%	3.83%
Shin-Hong: 11	9	1.13%	2.46%
Grenier-Bretherton-McCaa: 12	8	1.01%	2.19%
GFS 2011 (NMM): 83	8	1.01%	2.19%
MRF: 99	9	1.13%	2.46%
LES: 0	26	3.27%	7.1%
Sum:	794	100%	100%

Total answered: 366

Question 4

Surface Layer (sf_sfclay_physics)



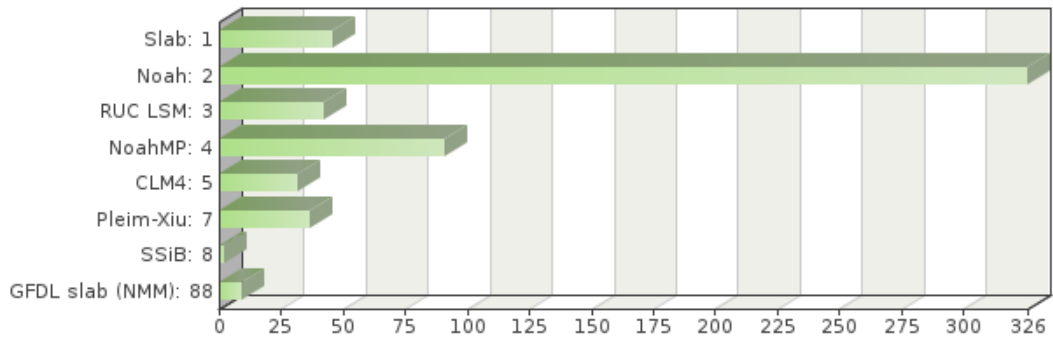
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
Revised MM5: 1	211	33.07%	60.11%
Eta/MYJ: 2	181	28.37%	51.57%
GFS (NMM): 3	23	3.61%	6.55%
QNSE: 4	28	4.39%	7.98%
MYNN: 5	94	14.73%	26.78%
Pleim-Xiu: 7	52	8.15%	14.81%
TEMF: 10	13	2.04%	3.7%
GFDL (NMM): 88	10	1.57%	2.85%
MM5: 91	26	4.08%	7.41%
Sum:	638	100%	100%

Total answered: 351

Question 5

Land Surface Model (sf_surface_physics)



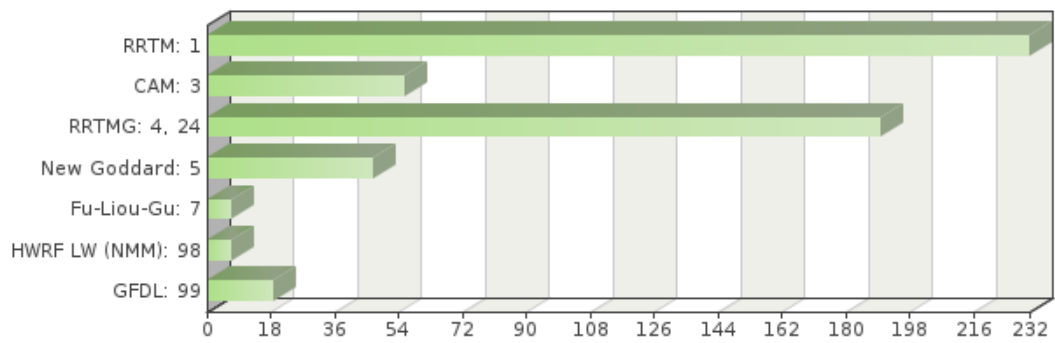
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
Slab: 1	46	7.86%	12.78%
Noah: 2	326	55.73%	90.56%
RUC LSM: 3	42	7.18%	11.67%
NoahMP: 4	91	15.56%	25.28%
CLM4: 5	32	5.47%	8.89%
Pleim-Xiu: 7	37	6.32%	10.28%
SSiB: 8	2	0.34%	0.56%
GFDL slab (NMM): 88	9	1.54%	2.5%
Sum:	585	100%	100%

Total answered: 360

Question 6

Longwave Radiation (ra_lw_physics)



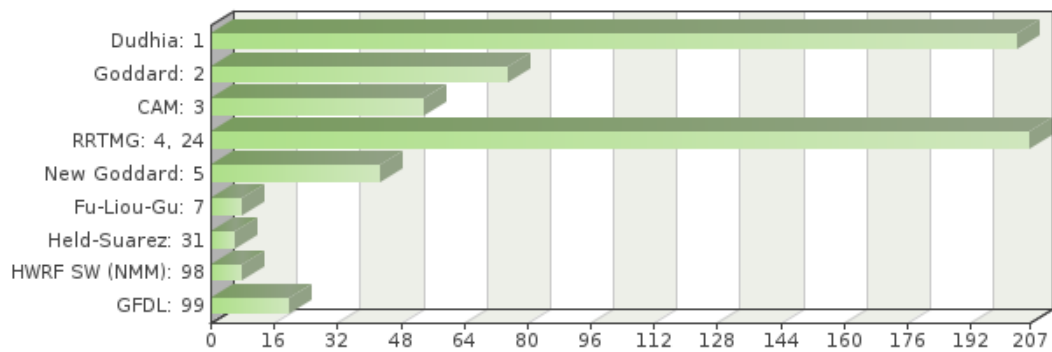
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
RRTM: 1	232	41.58%	65.72%
CAM: 3	56	10.04%	15.86%
RRTMG: 4, 24	190	34.05%	53.82%
New Goddard: 5	47	8.42%	13.31%
Fu-Liou-Gu: 7	7	1.25%	1.98%
HWRF LW (NMM): 98	7	1.25%	1.98%
GFDL: 99	19	3.41%	5.38%
Sum:	558	100%	100%

Total answered: 353

Question 7

Shortwave Radiation (ra_sw_physics)



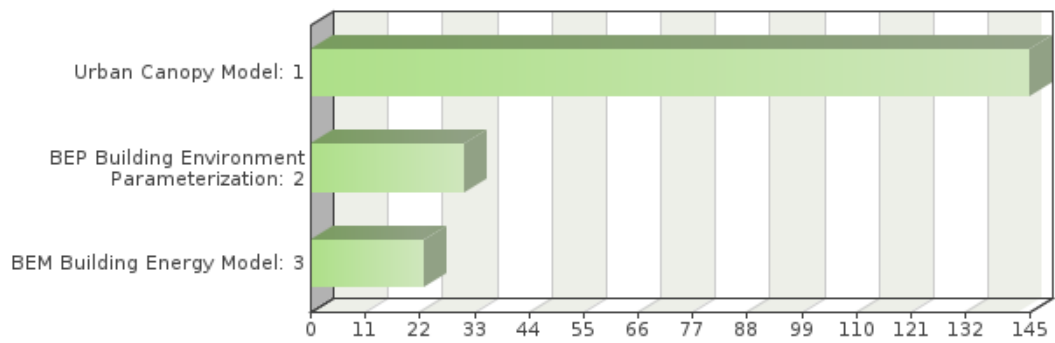
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
Dudhia: 1	204	32.64%	56.67%
Goddard: 2	75	12%	20.83%
CAM: 3	54	8.64%	15%
RRTMG: 4, 24	207	33.12%	57.5%
New Goddard: 5	43	6.88%	11.94%
Fu-Liou-Gu: 7	8	1.28%	2.22%
Held-Suarez: 31	6	0.96%	1.67%
HWRF SW (NMM): 98	8	1.28%	2.22%
GFDL: 99	20	3.2%	5.56%
Sum:	625	100%	100%

Total answered: 360

Question 8

Urban Surface Model (sf_urban_physics)



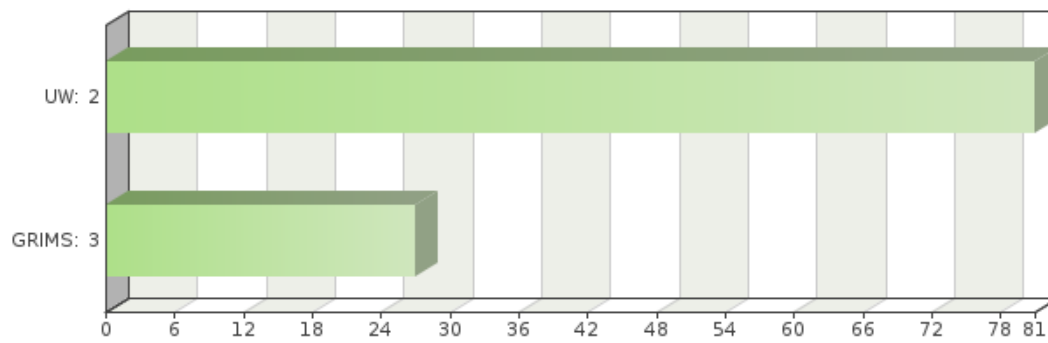
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
Urban Canopy Model: 1	145	72.86%	93.55%
BEP Building Environment Parameterization: 2	31	15.58%	20%
BEM Building Energy Model: 3	23	11.56%	14.84%
Sum:	199	100%	100%

Total answered: 155

Question 9

Shallow Cumulus (shcu_physics)



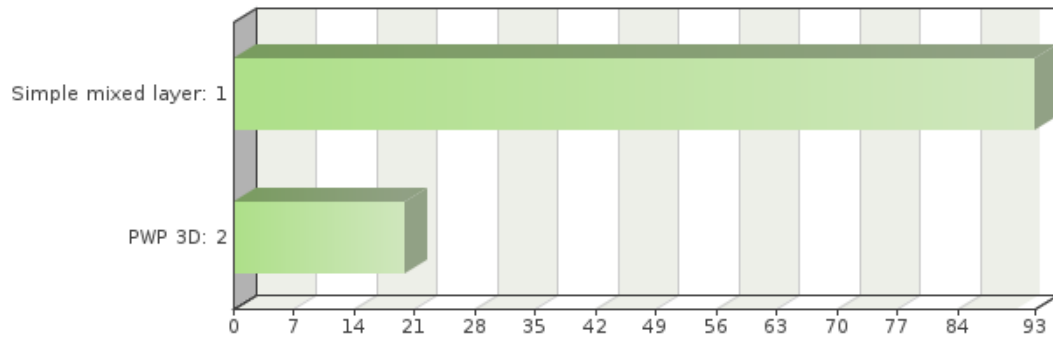
Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
UW: 2	81	75%	82.65%
GRIMS: 3	27	25%	27.55%
Sum:	108	100%	100%

Total answered: 98

Question 10

Ocean (sf_ocean_physics)



Frequency table

Choices	Absolute frequency	Relative frequency	Adjusted relative frequency
Simple mixed layer: 1	93	82.3%	91.18%
PWP 3D: 2	20	17.7%	19.61%
Sum:	113	100%	100%

Total answered: 102