Improving Data Efficiency for Plant Cover Prediction with Label Interpolation and Monte-Carlo Cropping - Supplementary Material

 $\begin{array}{c} \text{Matthias K\"{o}rschens}^{1,2[0000-0002-0755-2006]}, \, \text{Solveig Franziska} \\ \text{Bucher}^{1,2,3[0000-0002-2303-4583]}, \, \text{Christine R\"{o}mermann}^{1,2,3[0000-0003-3471-0951]}, \\ \text{and Joachim Denzler}^{1,2,3[0000-0002-3193-3300]} \end{array}$

¹ Friedrich Schiller University, D-07743 Jena, Germany
² German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig,
D-04103 Leipzig, Germany
³ Michael Stifel Center Jena, D-07743 Jena, Germany
{matthias.koerschens,solveig.franziska.bucher,
christine.roemermann,joachim.denzler}@uni-jena.de

1 Monte-Carlo Cropping - Numerial Results

In Table 1 the numerical values for our experiments with Monte-Carlo Cropping with weekly images and labels are shown, and in Table 2 the results for the experiments with the interpolated daily labels.

Table 1: Comparison of weekly images with original reference estimates trained with MCC with differing patch sizes and sample counts. Top results are marked in **bold font**.

Patch Size					128				
#Patches		64			128			256	
	MSAE	IoU	DPC	MSAE	IoU	DPC	MSAE	IoU	DPC
Epochs									
3	0.577	0.145	0.648	0.582	0.150	0.653	0.579	0.139	0.610
J	± 0.007	± 0.005	± 0.020	± 0.004	± 0.004	± 0.024	± 0.007	± 0.017	± 0.060
6	0.540	0.186	0.728	0.539	0.197	0.742	0.536	0.194	0.727
Ü	± 0.006		± 0.006	1		± 0.010	1	± 0.006	± 0.022
10	0.529	0.205	0.738	0.532	0.206	0.754	0.531	0.207	0.739
			± 0.009				± 0.013		
15	0.518	0.208	0.742	0.518	0.209	0.753	0.523	0.215	0.745
			± 0.018	1		± 0.013	1	± 0.001	
25	0.517	0.212	0.742	0.517	0.220	0.752	0.523	0.217	0.742
		± 0.006		1		± 0.002			± 0.004
40	0.523	0.219	0.746	0.527	0.212	0.746	0.529	0.216	0.739
	± 0.004	± 0.002	± 0.007	$ \pm 0.003 $	± 0.006	± 0.003	$ \pm 0.005 $	± 0.001	± 0.012
Patch Size					256				
Patch Size #Patches		16			256 32			64	
	MSAE	16 IoU	DPC	MSAE		DPC	MSAE	64 IoU	DPC
		_	DPC	MSAE	32	DPC	MSAE	-	DPC
#Patches Epochs		_	DPC	MSAE 0.557	32	DPC 0.651	MSAE 0.560	-	DPC 0.656
#Patches	MSAE	IoU 0.147	0.682		32 IoU 0.155	0.651		IoU 0.153	0.656
#Patches Epochs 3	MSAE 0.555	IoU 0.147	0.682	0.557	32 IoU 0.155	0.651	0.560	IoU 0.153	0.656
#Patches Epochs	MSAE $ \begin{array}{ c c c } \hline 0.555 \\ \pm 0.003 \\ 0.516 \end{array} $	$ \begin{array}{r} \text{IoU} \\ \hline 0.147 \\ \pm 0.014 \\ 0.193 \end{array} $	0.682 ± 0.028	0.557 ± 0.002 0.513	$ \begin{array}{r} 32 \\ \text{IoU} \\ \hline 0.155 \\ \pm 0.005 \\ 0.199 \end{array} $	$0.651 \\ \pm 0.042 \\ 0.755$	0.560 ± 0.001	IoU $0.153 \\ \pm 0.011 \\ 0.196$	$0.656 \pm 0.045 \ 0.751$
#Patches Epochs 3 6	MSAE $ \begin{array}{ c c c } \hline 0.555 \\ \pm 0.003 \\ 0.516 \end{array} $	$ \begin{array}{r} \text{IoU} \\ \hline 0.147 \\ \pm 0.014 \\ 0.193 \end{array} $	$ \begin{array}{c c} 0.682 \\ \pm 0.028 \\ 0.753 \end{array} $	0.557 ± 0.002 0.513	$ \begin{array}{r} 32 \\ \text{IoU} \\ \hline 0.155 \\ \pm 0.005 \\ 0.199 \end{array} $	$0.651 \\ \pm 0.042 \\ 0.755$	$0.560 \\ \pm 0.001 \\ 0.513$	IoU $0.153 \\ \pm 0.011 \\ 0.196$	$0.656 \pm 0.045 \ 0.751$
#Patches Epochs 3	$\begin{array}{ c c } MSAE \\ \hline & 0.555 \\ \pm 0.003 \\ & 0.516 \\ \pm 0.003 \\ & 0.507 \\ \hline \end{array}$	$ \begin{array}{r} \text{IoU} \\ \hline 0.147 \\ \pm 0.014 \\ 0.193 \\ \pm 0.004 \\ 0.200 \end{array} $	0.682 ± 0.028 0.753 ± 0.005	$0.557 \\ \pm 0.002 \\ 0.513 \\ \pm 0.002 \\ 0.504$	32 IoU 0.155 ±0.005 0.199 ±0.005 0.206 ±0.007	$0.651 \\ \pm 0.042 \\ 0.755 \\ \pm 0.013 \\ 0.764$	$0.560 \pm 0.001 \ 0.513 \pm 0.001$		0.656 ± 0.045 0.751 ± 0.011 0.761
#Patches Epochs 3 6 10	$\begin{array}{ c c } MSAE \\ \hline & 0.555 \\ \pm 0.003 \\ & 0.516 \\ \pm 0.003 \\ & 0.507 \\ \hline \end{array}$	$ \begin{array}{r} \text{IoU} \\ \hline 0.147 \\ \pm 0.014 \\ 0.193 \\ \pm 0.004 \\ 0.200 \end{array} $	$0.682 \\ \pm 0.028 \\ 0.753 \\ \pm 0.005 \\ 0.755$	$0.557 \\ \pm 0.002 \\ 0.513 \\ \pm 0.002 \\ 0.504$	$ \begin{array}{r} 32 \\ 10U \\ \hline 0.155 \\ \pm 0.005 \\ 0.199 \\ \pm 0.005 \\ 0.206 \\ \end{array} $	$0.651 \\ \pm 0.042 \\ 0.755 \\ \pm 0.013 \\ 0.764$	$0.560 \pm 0.001 \ 0.513 \pm 0.001 \ 0.506$		0.656 ± 0.045 0.751 ± 0.011 0.761
#Patches Epochs 3 6		$\begin{array}{c} \text{IoU} \\ \hline 0.147 \\ \pm 0.014 \\ 0.193 \\ \pm 0.004 \\ 0.200 \\ \pm 0.006 \\ 0.207 \\ \pm 0.005 \\ \end{array}$	0.682 ± 0.028 0.753 ± 0.005 0.755 ± 0.013 0.766 ± 0.003	0.557 ± 0.002 0.513 ± 0.002 0.504 ± 0.003	$\begin{array}{c} 32\\ \text{IoU} \\ \hline 0.155\\ \pm 0.005\\ 0.199\\ \pm 0.005\\ 0.206\\ \pm 0.007\\ 0.210\\ \pm 0.005\\ \end{array}$	$0.651 \pm 0.042 \\ 0.755 \pm 0.013 \\ 0.764 \pm 0.012 \\ 0.762$	0.560 ± 0.001 0.513 ± 0.001 0.506 ± 0.002 0.501 ± 0.002	$\begin{array}{c} \text{IoU} \\ \hline 0.153 \\ \pm 0.011 \\ 0.196 \\ \pm 0.004 \\ 0.205 \\ \pm 0.005 \\ 0.213 \\ \pm 0.002 \\ \end{array}$	$0.656 \pm 0.045 \\ 0.751 \pm 0.011 \\ 0.761 \\ \pm 0.009 \\ 0.758$
#Patches Epochs 3 6 10 15		$\begin{array}{c} 1 \text{oU} \\ \hline 0.147 \\ \pm 0.014 \\ 0.193 \\ \pm 0.004 \\ 0.200 \\ \pm 0.006 \\ 0.207 \\ \pm 0.005 \\ 0.208 \\ \end{array}$	$0.682 \\ \pm 0.028 \\ 0.753 \\ \pm 0.005 \\ 0.755 \\ \pm 0.013 \\ 0.766 \\ \pm 0.003 \\ 0.762$	$\begin{array}{c} 0.557 \\ \pm 0.002 \\ 0.513 \\ \pm 0.002 \\ 0.504 \\ \pm 0.003 \\ 0.505 \\ \pm 0.003 \\ 0.503 \end{array}$	$\begin{array}{c} 32 \\ \text{IoU} \\ \hline 0.155 \\ \pm 0.005 \\ 0.199 \\ \pm 0.005 \\ 0.206 \\ \pm 0.007 \\ 0.210 \\ \pm 0.005 \\ 0.214 \\ \end{array}$	$0.651 \\ \pm 0.042 \\ 0.755 \\ \pm 0.013 \\ 0.764 \\ \pm 0.012 \\ 0.762 \\ \pm 0.008 \\ 0.759$	$\begin{array}{c} 0.560 \\ \pm 0.001 \\ 0.513 \\ \pm 0.001 \\ 0.506 \\ \pm 0.002 \\ 0.501 \\ \pm 0.002 \\ 0.500 \end{array}$	$\begin{array}{c} \text{IoU} \\ \hline 0.153 \\ \pm 0.011 \\ 0.196 \\ \pm 0.004 \\ 0.205 \\ \pm 0.005 \\ 0.213 \\ \pm 0.002 \\ 0.216 \\ \end{array}$	$0.656 \\ \pm 0.045 \\ 0.751 \\ \pm 0.011 \\ 0.761 \\ \pm 0.009 \\ 0.758 \\ \pm 0.004 \\ 0.763$
#Patches Epochs 3 6 10	$\begin{array}{c} \text{MSAE} \\ \hline 0.555 \\ \pm 0.003 \\ 0.516 \\ \pm 0.003 \\ 0.507 \\ \pm 0.003 \\ 0.502 \\ \pm 0.004 \\ 0.499 \\ \pm 0.003 \\ \end{array}$	$\begin{array}{c} 10U\\ \hline 0.147\\ \pm 0.014\\ 0.193\\ \pm 0.004\\ 0.200\\ \pm 0.006\\ 0.207\\ \pm 0.005\\ 0.208\\ \pm 0.005\\ \end{array}$	$\begin{array}{c} 0.682 \\ \pm 0.028 \\ 0.753 \\ \pm 0.005 \\ 0.755 \\ \pm 0.013 \\ 0.766 \\ \pm 0.003 \\ 0.762 \\ \pm 0.007 \end{array}$	$\begin{array}{c} 0.557 \\ \pm 0.002 \\ 0.513 \\ \pm 0.002 \\ 0.504 \\ \pm 0.003 \\ 0.505 \\ \pm 0.003 \\ 0.503 \\ \pm 0.006 \end{array}$	$\begin{array}{c} 32 \\ \text{IoU} \\ \hline 0.155 \\ \pm 0.005 \\ 0.199 \\ \pm 0.005 \\ 0.206 \\ \pm 0.007 \\ 0.210 \\ \pm 0.005 \\ 0.214 \\ \pm 0.005 \\ \end{array}$	$\begin{array}{c} 0.651 \\ \pm 0.042 \\ 0.755 \\ \pm 0.013 \\ 0.764 \\ \pm 0.012 \\ 0.762 \\ \pm 0.008 \\ 0.759 \\ \pm 0.002 \end{array}$	$\begin{array}{c} 0.560 \\ \pm 0.001 \\ 0.513 \\ \pm 0.001 \\ 0.506 \\ \pm 0.002 \\ 0.501 \\ \pm 0.002 \\ 0.500 \\ \pm 0.006 \\ \end{array}$	$\begin{array}{c} \text{IoU} \\ \hline 0.153 \\ \pm 0.011 \\ 0.196 \\ \pm 0.004 \\ 0.205 \\ \pm 0.005 \\ 0.213 \\ \pm 0.002 \\ 0.216 \\ \pm 0.005 \\ \end{array}$	$\begin{array}{c} 0.656 \\ \pm 0.045 \\ 0.751 \\ \pm 0.011 \\ 0.761 \\ \pm 0.009 \\ 0.758 \\ \pm 0.004 \\ 0.763 \\ \pm 0.005 \end{array}$
#Patches Epochs 3 6 10 15	$\begin{array}{c} \text{MSAE} \\ \hline 0.555 \\ \pm 0.003 \\ 0.516 \\ \pm 0.003 \\ 0.507 \\ \pm 0.003 \\ 0.502 \\ \pm 0.004 \\ 0.499 \\ \pm 0.003 \\ 0.500 \\ \hline \end{array}$	$\begin{array}{c} 1 \text{oU} \\ \hline 0.147 \\ \pm 0.014 \\ 0.193 \\ \pm 0.004 \\ 0.200 \\ \pm 0.006 \\ 0.207 \\ \pm 0.005 \\ 0.208 \\ \pm 0.005 \\ 0.211 \\ \hline \end{array}$	$0.682 \\ \pm 0.028 \\ 0.753 \\ \pm 0.005 \\ 0.755 \\ \pm 0.013 \\ 0.766 \\ \pm 0.003 \\ 0.762$	$\begin{array}{c} 0.557 \\ \pm 0.002 \\ 0.513 \\ \pm 0.002 \\ 0.504 \\ \pm 0.003 \\ 0.505 \\ \pm 0.003 \\ 0.503 \\ \pm 0.006 \\ 0.503 \end{array}$	$\begin{array}{c} 32 \\ \text{IoU} \\ \hline 0.155 \\ \pm 0.005 \\ 0.199 \\ \pm 0.005 \\ 0.206 \\ \pm 0.007 \\ 0.210 \\ \pm 0.005 \\ 0.214 \\ \pm 0.005 \\ 0.212 \\ \hline \end{array}$	$\begin{array}{c} 0.651 \\ \pm 0.042 \\ 0.755 \\ \pm 0.013 \\ 0.764 \\ \pm 0.012 \\ 0.762 \\ \pm 0.008 \\ 0.759 \\ \pm 0.002 \\ 0.762 \end{array}$	$\begin{array}{c} 0.560 \\ \pm 0.001 \\ 0.513 \\ \pm 0.001 \\ 0.506 \\ \pm 0.002 \\ 0.501 \\ \pm 0.002 \\ 0.500 \\ \pm 0.006 \\ 0.507 \end{array}$	$\begin{array}{c} \text{IoU} \\ \hline 0.153 \\ \pm 0.011 \\ 0.196 \\ \pm 0.004 \\ 0.205 \\ \pm 0.005 \\ 0.213 \\ \pm 0.002 \\ 0.216 \\ \pm 0.005 \\ 0.217 \\ \hline \end{array}$	$\begin{array}{c} 0.656 \\ \pm 0.045 \\ 0.751 \\ \pm 0.011 \\ 0.761 \\ \pm 0.009 \\ 0.758 \\ \pm 0.004 \\ 0.763 \\ \pm 0.005 \\ 0.758 \end{array}$

Table 1: (Continued) Comparison of weekly images with original reference estimates trained with MCC with differing patch sizes and sample counts. Top results are marked in **bold font**.

Patch Size	9				512				
#Patches		4			8			16	
	MSAE	IoU	DPC	MSAE	IoU	DPC	MSAE	IoU	DPC
Epochs									
0	0.554	0.154	0.702	0.551	0.157	0.682	0.551	0.159	0.668
3	± 0.005	± 0.004	± 0.023	± 0.004	± 0.008	± 0.023	± 0.004	± 0.005	± 0.028
6	0.512	0.189	0.760	0.509	0.191	0.764	0.509	0.193	0.764
O	1		± 0.015	1		± 0.007			± 0.009
10	0.501	0.193	0.771	0.496	0.198	0.777	0.500	0.202	0.772
10				± 0.001					± 0.007
15	0.498	0.193	0.764	0.496	0.205	0.766	0.496	0.204	0.772
									± 0.008
25	0.495	0.201	0.766	0.494	0.205	0.758	0.495	0.209	0.760
	0.494	0.194	± 0.004	$\begin{bmatrix} \pm 0.001 \\ 0.492 \end{bmatrix}$	± 0.008 0.200	0.764	0.491	± 0.003 0.205	± 0.007 0.766
40				1			1		± 0.005
	10.009	10.000	±0.003	1 ±0.003	±0.007	±0.007	1 ± 0.002	±0.008	±0.005
Patch Size					1024				
Patch Size #Patches		1	J		2			4	
#Patches	MSAE	1 IoU	DPC	MSAE	_	DPC	MSAE	4 IoU	DPC
			DPC	MSAE	2	DPC	MSAE		DPC
#Patches Epochs			DPC 0.671	MSAE 0.552	2	DPC 0.678	MSAE 0.545		DPC 0.710
#Patches	MSAE 0.554	IoU	0.671		2 IoU 0.151	0.678		IoU 0.153	0.710
#Patches Epochs 3	MSAE 0.554 ±0.003 0.511	$ \begin{array}{r} \text{IoU} \\ \hline 0.148 \\ \pm 0.000 \\ 0.171 \end{array} $	$ \begin{array}{c c} 0.671 \\ \pm 0.039 \\ 0.754 \end{array} $	$0.552 \pm 0.011 \ 0.508$	$ \begin{array}{c} 2 \\ \text{IoU} \\ \hline 0.151 \\ \pm 0.011 \\ 0.185 \end{array} $	$0.678 \\ \pm 0.050 \\ 0.765$	$0.545 \pm 0.003 \ 0.508$	IoU $0.153 \\ \pm 0.010 \\ 0.182$	$ \begin{array}{r} 0.710 \\ \pm 0.022 \\ 0.766 \end{array} $
#Patches Epochs			$ \begin{array}{c c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \end{array} $	0.552 ± 0.011 0.508 ± 0.004	$ \begin{array}{c} 2 \\ \text{IoU} \\ \hline 0.151 \\ \pm 0.011 \\ 0.185 \\ \pm 0.001 \end{array} $	0.678 ± 0.050 0.765 ± 0.007	$0.545 \pm 0.003 \ 0.508 \pm 0.002$		$ \begin{array}{r} 0.710 \\ \pm 0.022 \\ 0.766 \\ \pm 0.007 \end{array} $
#Patches Epochs 3 6		$ \begin{array}{c} 10U \\ \hline 0.148 \\ \pm 0.000 \\ 0.171 \\ \pm 0.003 \\ 0.173 \end{array} $	$\begin{array}{c c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \\ 0.761 \end{array}$	0.552 ± 0.011 0.508 ± 0.004 0.499	$ \begin{array}{c} 2 \\ 10U \\ \hline 0.151 \\ \pm 0.011 \\ 0.185 \\ \pm 0.001 \\ 0.180 \end{array} $	$ \begin{array}{c c} 0.678 \\ \pm 0.050 \\ 0.765 \\ \pm 0.007 \\ 0.772 \end{array} $	0.545 ± 0.003 0.508 ± 0.002 0.497	$ \begin{array}{c} $	0.710 ± 0.022 0.766 ± 0.007 0.771
#Patches Epochs 3			$\begin{array}{c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \\ 0.761 \\ \pm 0.013 \end{array}$	0.552 ± 0.011 0.508 ± 0.004 0.499 ± 0.002	$ \begin{array}{c} 2 \\ 10U \\ \hline 0.151 \\ \pm 0.011 \\ 0.185 \\ \pm 0.001 \\ 0.180 \\ \pm 0.012 \end{array} $	$\begin{array}{c c} 0.678 \\ \pm 0.050 \\ 0.765 \\ \pm 0.007 \\ 0.772 \\ \pm 0.001 \end{array}$	0.545 ± 0.003 0.508 ± 0.002 0.497 ± 0.002	$ \begin{array}{r} \hline $	$0.710 \\ \pm 0.022 \\ 0.766 \\ \pm 0.007 \\ 0.771 \\ \pm 0.006$
#Patches Epochs 3 6		$ \begin{array}{r} $	$\begin{array}{c c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \\ 0.761 \\ \pm 0.013 \\ 0.762 \end{array}$	$0.552 \pm 0.011 \\ 0.508 \pm 0.004 \\ 0.499 \pm 0.002 \\ 0.496$	$ \begin{array}{c} 2\\ \text{IoU} \\ \hline 0.151\\ \pm 0.011\\ 0.185\\ \pm 0.001\\ 0.180\\ \pm 0.012\\ 0.193 \end{array} $	$\begin{array}{c} 0.678 \\ \pm 0.050 \\ 0.765 \\ \pm 0.007 \\ 0.772 \\ \pm 0.001 \\ 0.761 \end{array}$	0.545 ± 0.003 0.508 ± 0.002 0.497 ± 0.002 0.493	$ \begin{array}{c} \hline $	$0.710 \\ \pm 0.022 \\ 0.766 \\ \pm 0.007 \\ 0.771 \\ \pm 0.006 \\ 0.772$
#Patches Epochs 3 6 10		$\begin{array}{c} \text{IoU} \\ \hline 0.148 \\ \pm 0.000 \\ 0.171 \\ \pm 0.003 \\ 0.173 \\ \pm 0.008 \\ 0.186 \\ \pm 0.008 \\ \end{array}$	$\begin{array}{c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \\ 0.761 \\ \pm 0.013 \\ 0.762 \\ \pm 0.011 \end{array}$	$0.552 \pm 0.011 \\ 0.508 \pm 0.004 \\ 0.499 \pm 0.002 \\ 0.496 \pm 0.002$	$\begin{array}{c} 2\\ \text{IoU} \\ \hline 0.151\\ \pm 0.011\\ 0.185\\ \pm 0.001\\ 0.180\\ \pm 0.012\\ 0.193\\ \pm 0.008 \\ \end{array}$	$\begin{array}{c} 0.678 \\ \pm 0.050 \\ 0.765 \\ \pm 0.007 \\ 0.772 \\ \pm 0.001 \\ 0.761 \\ \pm 0.010 \\ \end{array}$	0.545 ± 0.003 0.508 ± 0.002 0.497 ± 0.002 0.493 ± 0.002		$0.710 \\ \pm 0.022 \\ 0.766 \\ \pm 0.007 \\ 0.771 \\ \pm 0.006 \\ 0.772 \\ \pm 0.009$
#Patches Epochs 3 6 10	$ \begin{vmatrix} 0.554 \\ \pm 0.003 \\ 0.511 \\ \pm 0.003 \\ 0.503 \\ \pm 0.005 \\ 0.498 \\ \pm 0.002 \\ 0.493 \end{vmatrix} $		$\begin{array}{c c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \\ 0.761 \\ \pm 0.013 \\ 0.762 \\ \pm 0.011 \\ 0.751 \end{array}$	$\begin{array}{c} 0.552 \\ \pm 0.011 \\ 0.508 \\ \pm 0.004 \\ 0.499 \\ \pm 0.002 \\ 0.496 \\ \pm 0.002 \\ \textbf{0.489} \end{array}$	$\begin{array}{c} 2\\ \text{IoU} \\ \hline 0.151\\ \pm 0.011\\ 0.185\\ \pm 0.001\\ 0.180\\ \pm 0.012\\ 0.193\\ \pm 0.008\\ 0.186 \\ \end{array}$	$\begin{array}{c c} 0.678 \\ \pm 0.050 \\ 0.765 \\ \pm 0.007 \\ 0.772 \\ \pm 0.001 \\ 0.761 \\ \pm 0.010 \\ 0.753 \end{array}$	$0.545 \pm 0.003 \\ 0.508 \pm 0.002 \\ 0.497 \pm 0.002 \\ 0.493 \pm 0.002 \\ 0.489$		$\begin{array}{c} 0.710 \\ \pm 0.022 \\ 0.766 \\ \pm 0.007 \\ 0.771 \\ \pm 0.006 \\ 0.772 \\ \pm 0.009 \\ 0.758 \end{array}$
#Patches Epochs 3 6 10 15	$ \begin{vmatrix} 0.554 \\ \pm 0.003 \\ 0.511 \\ \pm 0.003 \\ 0.503 \\ \pm 0.005 \\ 0.498 \\ \pm 0.002 \\ 0.493 \\ \pm 0.004 \\ \end{vmatrix} $	$\begin{array}{c} \text{IoU} \\ \hline 0.148 \\ \pm 0.000 \\ 0.171 \\ \pm 0.003 \\ 0.173 \\ \pm 0.008 \\ 0.186 \\ \pm 0.008 \\ 0.177 \\ \pm 0.009 \\ \end{array}$	$\begin{array}{c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \\ 0.761 \\ \pm 0.013 \\ 0.762 \\ \pm 0.011 \\ 0.751 \\ \pm 0.006 \end{array}$	$\begin{array}{c} 0.552 \\ \pm 0.011 \\ 0.508 \\ \pm 0.004 \\ 0.499 \\ \pm 0.002 \\ 0.496 \\ \pm 0.002 \\ \textbf{0.489} \\ \pm 0.002 \end{array}$	$\begin{array}{c} 2\\ \text{IoU} \\ \hline 0.151\\ \pm 0.011\\ 0.185\\ \pm 0.001\\ 0.180\\ \pm 0.012\\ 0.193\\ \pm 0.008\\ 0.186\\ \pm 0.012\\ \end{array}$	$\begin{array}{c} 0.678 \\ \pm 0.050 \\ 0.765 \\ \pm 0.007 \\ 0.772 \\ \pm 0.001 \\ 0.761 \\ \pm 0.010 \\ 0.753 \\ \pm 0.009 \end{array}$	$\begin{array}{c} 0.545 \\ \pm 0.003 \\ 0.508 \\ \pm 0.002 \\ 0.497 \\ \pm 0.002 \\ 0.493 \\ \pm 0.002 \\ \textbf{0.489} \\ \pm 0.001 \end{array}$		$\begin{array}{c} 0.710 \\ \pm 0.022 \\ 0.766 \\ \pm 0.007 \\ 0.771 \\ \pm 0.006 \\ 0.772 \\ \pm 0.009 \\ 0.758 \\ \pm 0.005 \end{array}$
#Patches Epochs 3 6 10 15	$\begin{array}{c} \text{MSAE} \\ \hline 0.554 \\ \pm 0.003 \\ 0.511 \\ \pm 0.003 \\ 0.503 \\ \pm 0.005 \\ 0.498 \\ \pm 0.002 \\ 0.493 \\ \pm 0.004 \\ 0.493 \\ \hline \end{array}$		$\begin{array}{c} 0.671 \\ \pm 0.039 \\ 0.754 \\ \pm 0.012 \\ 0.761 \\ \pm 0.013 \\ 0.762 \\ \pm 0.011 \\ 0.751 \\ \pm 0.006 \\ 0.752 \end{array}$	$\begin{array}{c} 0.552 \\ \pm 0.011 \\ 0.508 \\ \pm 0.004 \\ 0.499 \\ \pm 0.002 \\ 0.496 \\ \pm 0.002 \\ \textbf{0.489} \end{array}$	$\begin{array}{c} 2\\ \text{IoU} \\ \hline 0.151\\ \pm 0.011\\ 0.185\\ \pm 0.001\\ 0.180\\ \pm 0.012\\ 0.193\\ \pm 0.008\\ 0.186\\ \pm 0.012\\ 0.178\\ \end{array}$	$\begin{array}{c} 0.678 \\ \pm 0.050 \\ 0.765 \\ \pm 0.007 \\ 0.772 \\ \pm 0.001 \\ 0.761 \\ \pm 0.010 \\ 0.753 \\ \pm 0.009 \\ 0.759 \end{array}$	$\begin{array}{c} 0.545 \\ \pm 0.003 \\ 0.508 \\ \pm 0.002 \\ 0.497 \\ \pm 0.002 \\ 0.493 \\ \pm 0.002 \\ \textbf{0.489} \\ \pm 0.001 \\ \textbf{0.489} \end{array}$		$\begin{array}{c} 0.710 \\ \pm 0.022 \\ 0.766 \\ \pm 0.007 \\ 0.771 \\ \pm 0.006 \\ 0.772 \\ \pm 0.009 \\ 0.758 \\ \pm 0.005 \\ 0.762 \end{array}$

Table 2: Comparison of daily images with original reference estimates and interpolated ones trained with MCC with differing patch sizes and sample counts. Top results are marked in **bold font**.

Patch Size	:				128				
#Patches		64			128			256	
	MSAE	IoU	DPC	MSAE	IoU	DPC	MSAE	IoU	DPC
Epochs									
3	0.517	0.205	0.753	0.519	0.207	0.763	0.520	0.210	0.759
J	± 0.003	± 0.004	± 0.006	± 0.004	± 0.006	± 0.003	± 0.007	± 0.005	± 0.017
6	0.516	0.223	0.759	0.526	0.225	0.754	0.526	0.230	0.756
U	± 0.004	± 0.006	± 0.004	± 0.001	± 0.007	± 0.001	± 0.005	± 0.008	± 0.002
10	0.523	0.229	0.756	0.529	0.232	0.756	0.537	0.227	0.743
10	± 0.001	± 0.005	± 0.014	± 0.005	± 0.003	± 0.016	± 0.006	± 0.004	± 0.005
15	0.532	0.227	0.757	0.541	0.221	0.751	0.544	0.222	0.745
10	± 0.002	± 0.006	± 0.016	$ \pm 0.008 $	± 0.003	± 0.017	$ \pm 0.007 $	± 0.002	± 0.016
Patch Size					256				
Patch Size #Patches		16			256 32			64	
	MSAE	16 IoU	DPC	MSAE		DPC	MSAE	64 IoU	DPC
			DPC	MSAE	32	DPC	MSAE	-	DPC
#Patches Epochs			DPC 0.776	MSAE 0.500	32	DPC 0.777	MSAE 0.501	-	DPC 0.775
#Patches	MSAE 0.499	IoU 0.207	0.776	0.500	32 IoU 0.205	0.777		IoU 0.207	0.775
#Patches Epochs 3	MSAE 0.499	IoU 0.207	0.776	0.500	32 IoU 0.205	0.777	0.501	IoU 0.207	0.775
#Patches Epochs	MSAE $ \begin{array}{ c c c c c c } \hline 0.499 \\ \pm 0.003 \\ 0.499 \end{array} $	IoU 0.207 ±0.001	0.776 ± 0.005 0.768	0.500 ± 0.005 0.498	$ \begin{array}{r} 32 \\ \text{IoU} \\ \hline 0.205 \\ \pm 0.007 \\ 0.223 \end{array} $	0.777 ± 0.009 0.769	0.501 ± 0.003	$ \begin{array}{r} \text{IoU} \\ \hline 0.207 \\ \pm 0.005 \\ 0.228 \end{array} $	0.775 ± 0.002
#Patches Epochs 3 6	MSAE $ \begin{array}{ c c c c c c } \hline 0.499 \\ \pm 0.003 \\ 0.499 \end{array} $	$ \begin{array}{c} \text{IoU} \\ \hline 0.207 \\ \pm 0.001 \\ 0.214 \end{array} $	0.776 ± 0.005 0.768	0.500 ± 0.005 0.498	$ \begin{array}{r} 32 \\ \text{IoU} \\ \hline 0.205 \\ \pm 0.007 \\ 0.223 \end{array} $	0.777 ± 0.009 0.769	$0.501 \pm 0.003 \ 0.502$	$ \begin{array}{r} \text{IoU} \\ \hline 0.207 \\ \pm 0.005 \\ 0.228 \end{array} $	0.775 ± 0.002 0.763
#Patches Epochs 3		$\begin{array}{c} \text{IoU} \\ \hline 0.207 \\ \pm 0.001 \\ 0.214 \\ \pm 0.006 \end{array}$	$0.776 \\ \pm 0.005 \\ 0.768 \\ \pm 0.005 \\ 0.769$	$0.500 \pm 0.005 \ 0.498 \pm 0.003 \ 0.507$	$ \begin{array}{r} 32 \\ 10U \\ \hline 0.205 \\ \pm 0.007 \\ 0.223 \\ \pm 0.007 \\ 0.224 \end{array} $	$0.777 \pm 0.009 \ 0.769 \pm 0.001 \ 0.771$	$0.501 \pm 0.003 \ 0.502 \pm 0.003$	$ \begin{array}{c} 10U \\ 0.207 \\ \pm 0.005 \\ 0.228 \\ \pm 0.007 \\ 0.227 \end{array} $	0.775 ± 0.002 0.763 ± 0.004 0.769
#Patches Epochs 3 6			$0.776 \\ \pm 0.005 \\ 0.768 \\ \pm 0.005 \\ 0.769$	$0.500 \pm 0.005 \ 0.498 \pm 0.003 \ 0.507$	$ \begin{array}{r} 32 \\ 10U \\ \hline 0.205 \\ \pm 0.007 \\ 0.223 \\ \pm 0.007 \\ 0.224 \end{array} $	$0.777 \pm 0.009 \ 0.769 \pm 0.001 \ 0.771$	$0.501 \pm 0.003 \ 0.502 \pm 0.003 \ 0.506$	$ \begin{array}{c} 10U \\ 0.207 \\ \pm 0.005 \\ 0.228 \\ \pm 0.007 \\ 0.227 \end{array} $	0.775 ± 0.002 0.763 ± 0.004 0.769

Table 2: (Continued) Comparison of daily images with original reference estimates and interpolated ones trained with MCC with differing patch sizes and sample counts. Top results are marked in **bold font**.

Patch Size					512				
#Patches		4			8			16	
	MSAE	IoU	DPC	MSAE	IoU	DPC	MSAE	IoU	DPC
Epochs									
3	0.496	0.193	0.783	0.492	0.198	0.784	0.490	0.202	0.780
3	± 0.001	± 0.008	± 0.005	± 0.002	± 0.012	± 0.007	± 0.003	± 0.004	± 0.004
6	0.492	0.195	0.769	0.494	0.211	0.768	0.494	0.218	0.776
Ü	± 0.003	± 0.007	± 0.005	± 0.002	± 0.013	± 0.005	± 0.004	± 0.008	± 0.003
10	0.492	0.201	0.772	0.490	0.209	0.770	0.490	0.214	0.774
10			± 0.006			± 0.007			± 0.006
15	0.493	0.186	0.772	0.493	0.197	0.775	0.498	0.197	0.778
10	± 0.003	± 0.007	± 0.009	$ \pm 0.002 $	± 0.007	± 0.004	$ \pm 0.005 $	± 0.009	± 0.007
Patch Size					1024				
Patch Size #Patches		1			1024 2			4	
	MSAE	1 IoU	DPC	MSAE		DPC	MSAE	4 IoU	DPC
		_	DPC	MSAE	2	DPC	MSAE	_	DPC
#Patches Epochs		_	DPC	MSAE 0.494	2	DPC 0.778	MSAE 0.492	_	DPC 0.780
#Patches	MSAE 0.498	IoU 0.176	0.775		2 IoU 0.183	0.778	0.492	IoU	0.780
#Patches Epochs 3	MSAE 0.498	IoU 0.176	0.775	0.494	2 IoU 0.183	0.778	0.492	IoU 0.194	0.780
#Patches Epochs	MSAE $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	IoU $0.176 \pm 0.013 \\ 0.162$	$ \begin{array}{c c} 0.775 \\ \pm 0.005 \\ 0.766 \end{array} $	$0.494 \pm 0.003 \\ 0.488$	$ \begin{array}{c} 2 \\ \text{IoU} \\ \hline 0.183 \\ \pm 0.009 \\ 0.187 \end{array} $	$0.778 \pm 0.006 \ 0.774$	0.492 ± 0.001 0.490	IoU 0.194 ±0.010	$ \begin{array}{r} 0.780 \\ \pm 0.007 \\ 0.770 \end{array} $
#Patches Epochs 3 6	MSAE $ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	IoU $0.176 \pm 0.013 \\ 0.162$	$ \begin{array}{c c} 0.775 \\ \pm 0.005 \\ 0.766 \end{array} $	$0.494 \pm 0.003 \\ 0.488$	$ \begin{array}{c} 2 \\ \text{IoU} \\ \hline 0.183 \\ \pm 0.009 \\ 0.187 \end{array} $	$0.778 \pm 0.006 \ 0.774$	0.492 ± 0.001 0.490	IoU 0.194 ±0.010 0.198	$ \begin{array}{r} 0.780 \\ \pm 0.007 \\ 0.770 \end{array} $
#Patches Epochs 3		$ \begin{array}{r} \text{IoU} \\ \hline 0.176 \\ \pm 0.013 \\ 0.162 \\ \pm 0.015 \\ 0.168 \end{array} $	$\begin{array}{c c} 0.775 \\ \pm 0.005 \\ 0.766 \\ \pm 0.002 \\ 0.769 \end{array}$	0.494 ± 0.003 0.488 ± 0.001 0.487	$ \begin{array}{c} 2\\ 10U\\ \hline 0.183\\ \pm 0.009\\ 0.187\\ \pm 0.012\\ 0.172 \end{array} $	$ \begin{array}{c c} 0.778 \\ \pm 0.006 \\ 0.774 \\ \pm 0.003 \\ 0.770 \end{array} $	0.492 ± 0.001 0.490 ± 0.001 0.489		$ \begin{array}{r} 0.780 \\ \pm 0.007 \\ 0.770 \\ \pm 0.003 \\ 0.769 \end{array} $
#Patches Epochs 3 6		$ \begin{array}{r} \text{IoU} \\ \hline 0.176 \\ \pm 0.013 \\ 0.162 \\ \pm 0.015 \\ 0.168 \end{array} $	$\begin{array}{c c} 0.775 \\ \pm 0.005 \\ 0.766 \\ \pm 0.002 \\ 0.769 \end{array}$	0.494 ± 0.003 0.488 ± 0.001 0.487	$ \begin{array}{c} 2\\ 10U\\ \hline 0.183\\ \pm 0.009\\ 0.187\\ \pm 0.012\\ 0.172 \end{array} $	$ \begin{array}{c c} 0.778 \\ \pm 0.006 \\ 0.774 \\ \pm 0.003 \\ 0.770 \end{array} $	0.492 ± 0.001 0.490 ± 0.001 0.489	$ \begin{array}{c} 10U \\ \hline 0.194 \\ \pm 0.010 \\ 0.198 \\ \pm 0.015 \\ 0.193 \end{array} $	$ \begin{array}{r} 0.780 \\ \pm 0.007 \\ 0.770 \\ \pm 0.003 \\ 0.769 \end{array} $